

**THE
RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation
INCORPORATING

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RAILWAYS • ILLUSTRATED

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An index to the seventy-fifth volume of THE RAILWAY GAZETTE covering the issues from July 4 to December 26, 1941, has been prepared, and is now available free of charge on application to the Publisher

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

DISPATCH OF "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and machinery for such dispatch, and any reader desirous of arranging for copies to be delivered to an agent or correspondent overseas should place the order with us together with the necessary delivery instructions.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas, as they are stopped under the provisions of Statutory Rules & Orders No. 1190 of 1940, and No. 359 of 1941

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:

Mondays to Fridays 9.30 a.m. till 3.45 p.m.

The office is closed on Saturdays

Impending Railway Dividends

NEXT month the boards of the home railway companies will once more be faced with the problem of deciding dividend distributions in circumstances which so far as can be seen at the present time will contain major elements of uncertainty. This will be the first occasion on which annual accounts have to be made up on the basis of the new agreement with the Government, providing for a rental of £43,000,000 a year. It is as yet uncertain, however, what allowance will have to be made for war damage contribution, and in the absence of information on this point, widely divergent views are held as to the likely dividend decisions. The City Editor of *The Sunday Times* inclines to the view that a repetition of last year's dividends is the most that can be expected. The "Diarist" in *The Financial Times*, on the other hand, although disavowing association with those who talk of increased dividends, suggests that two important new points in the revised financial agreement may have been overlooked by the pessimists. These are, first, that the £3,300,000 by which the yearly rental exceeds the former guaranteed minimum net revenue has been allocated to the controlled undertakings in direct ratio to their standard revenues, and, secondly, that the Government is to charge to the pooled receipts of the railways (before the rental payment), the interest on capital raised or capital redeemed after the end of 1937 in the case of the railways, and after June 30, 1939, in the case of London Transport. This concession alone it is calculated might mean almost 1 per cent. extra on Southern deferred, which received 1½ per cent. for 1940.

Fuel Economy and Transport

As the predominant means by which coal is transported as well as very large scale consumers of fuel of all kinds, the railways are directly interested in the intensive efforts which are being made at the incidence of the Mines Department to achieve the greatest possible economy in coal consumption. Throughout the country endeavours are being made to enlist the aid of members of scientific and technical organisations, industrial administrators, and employees in the application of practical experience in making the utmost use of every ton of coal used in industry. It is estimated that it is necessary to save during the war great quantities of coal in order that it may be possible to meet expanding demand, and that this can be done very largely by the more efficient generation and use of heat and power in existing industrial works. Dr. E. S. Grumell, Chairman of the Fuel Efficiency Committee of the Mines Department holds the view that an economy target of 9,000,000 to 10,000,000 tons is reasonable of attainment. His figure is made up as to 4,500,000 tons saving in generation processes, a similar quantity after generation, and from 500,000 to 1,000,000 tons in production and transport.

Fuel Saving on the G.W.R.

The importance of economising in the use of locomotive fuel supplies is intensified by present conditions and has frequently been made the subject of well-reasoned propaganda by the railway companies. An article in the January issue of the *Great Western Railway Magazine* contains some striking figures relating to the mileage run by locomotives on that system and the amount of coal burned by them. At present, it is stated, almost 94,500,000 miles are run by the engines and to accomplish this nearly 2,000,000 tons of coal are required. Thus a reduction of only 1 lb. of coal a mile would result in an annual saving of over 42,000 tons, or about 84 trains of 50 wagons each. To leave the matter there is not enough; it is necessary to suggest how saving can be effected so that not only is there an economy in actual fuel consumption, but a reduction of the number of trains required. Several suggestions to this end are made in the *G.W.R. Magazine* article, and whilst none of them can claim to be new they are all worthy of repetition with emphasis. They include care in stacking the coal on the tenders and in its general handling at the depots, the maintenance of the smokebox, firebox, and tubes in as clean a condition as possible, and the preparation of the fire by

the steam raisers at the shed, so that when the enginemen take over there is sufficient fire and steam pressure to enable the fireman to build up his fire, thus ensuring that when the engine goes off shed it is just right to take on its train without waste of fuel or steam pressure. As goes without saying, skill and care in the handling of the engine, and particularly of the fire whilst running, are reflected in substantial fuel economy.

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Bureaucratic Power

That the arbitrary rulings which Government Departments under wartime conditions are inclined to give to those who operate industry tend rather to slow down than to improve efficiency is becoming apparent. In the recent debate on the Government's Maximum National Effort Act a good many disquieting revelations were made by Members of Parliament as to the overall efficiency of industry, which responsible speakers suggested was much lower than the 75 per cent. which Sir John Wardlaw-Milne had recently estimated. Sir John himself in the debate gave numerous instances of the results of remote control, and, as Chairman of the Select Committee on National Expenditure, he has had good opportunity to observe the working of industry. The railways themselves are not escaping this unfortunate phase of bureaucracy, but it will have to be recognised—and the sooner the better—that where there are experts charged to achieve specific results it is fatal to interfere with their methods and override their rulings, for that, by encroaching on their authority, simply relieves them of responsibility. The bureaucrat may interpret policy, *i.e.*, specify results, but that is as far as he may legitimately go, leaving the method of fulfilling the policy to the experts. The purpose of the railways is to carry passengers and goods with the greatest expedition possible in any given circumstances, while making the best use of available equipment. There should be no attempt to dictate to the railway experts how they should use their equipment.

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Cable Haulage with Descending Locomotives

Our issue of November 21 (page 534) contained a brief account, with illustration, of the peculiar cable haulage arrangements adopted from about 1845 until 1927 on the 1 in 30 incline between Erkrath and Hochdahl, on the Düsseldorf—Elberfeld line, whereby an ascending train was assisted by a cable, the other end of which was hauled by a locomotive descending on a special track. The usual alternative to an endless cable, to which (as formerly on the Cowlairs incline) the ascending train is specially attached, is the system used on funiculars and some mineral lines, where a descending load is worked with an ascending one, and an engine house is employed to control and brake the movement. It is interesting to note that the Pwll-yr-Hebog mineral incline in South Wales, on the G.W.R. (formerly Taff Vale), about 1,000 yd. long, and leaving the Rhondda Valley line just west of Ton-y-pandy station, is operated on the principle adopted on the Erkrath incline, except that the ascending train has a locomotive in rear, for security against runaways. There is stabling at each end of the incline for the four locomotives used—at present, according to *The Stephenson Locomotive Journal*, Nos 792, 793, 794, and 257. This is the only other instance of the method of working that has come to our notice.

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A "Pullman City" in Milwaukee

Emergency sleeping accommodation in standing railway cars is no new development, but seldom, probably, has it been provided on so extensive a scale as by the Chicago & North Western and Chicago, Milwaukee, St. Paul & Pacific Railroads during the national convention in September last of the American Legion. To supplement the hotel accommodation in Milwaukee, where the convention was held, each company assembled a "Pullman City" in conveniently located sidings, the former with 48 and the latter with 45 cars. The Milwaukee used a power car with motor generator equipment to convert the city a.c. current to d.c., for

keeping the Pullman batteries charged, and thus providing power for light and air-conditioning; a stand-by locomotive supplied steam; and shower-baths were provided for men and women in two suitably-fitted baggage cars. Similar arrangements were made by the North Western company. Many of the 62,500 legionnaires and their friends stayed for the convention in Chicago, 85 miles away, and at the intermediate towns of Kenosha and Racine, and their movement into and out of Milwaukee necessitated a considerable increase in the train service on these routes, as well as over the Chicago, North Shore & Milwaukee electric line, during the five days concerned. Fifty Milwaukee specials were handled daily additional to the normal service of 25 trains, and during one 70 min. period this company handled 7,000 passengers at its Milwaukee station. The North Western ran 29 specials in addition to its normal service of 23 trains, and the North Shore ran a special service between Kenosha and Milwaukee.

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War Gas and the Railways

Under the Geneva Protocol of 1925, the use of poison gas in warfare is forbidden, and most of the countries involved in the present conflict are parties to this agreement. Nevertheless, it is obvious from the elaborate anti-gas precautions which have been taken by all concerned that little reliance is placed by the Allied Powers upon the assurance of our enemies being observed in all eventualities, and enemy anti-gas precautions may be regarded not improperly as an indication of the recognition that any breach of the Geneva Protocol by a gas attack upon ourselves or our allies would be met by immediate reprisals. Accordingly, the British railways have carried out extensive anti-gas measures, some details of which have been published from time to time in our columns. These precautions include the training of staff in anti-gas measures, the provision of protective clothing, arrangements for the decontamination of buildings, engines, and rolling stock, and cleansing facilities for staff taking part in the air raid precautionary arrangements. Cleansing facilities are provided at many places, and, to augment these, special mobile cleansing units have been prepared and located at points whence they can be despatched at short notice to wherever required. Such a unit, on the G.W.R., was illustrated and briefly described at pages 66 and 70 of our January 9 issue.

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Lantern Slides at Technical Meetings

It is a curious thing that so many speakers at the meetings of technical societies exhibit lantern slides intended to illustrate their points, but which are scarcely visible to members of the audience because they are photographs from working drawings. The magnification on the screen is so great that the lines and lettering become disproportionately fine, and too often only those with the keenest sight or a pair of opera glasses can decipher them. The remedy, of course, is to employ an expert in the preparation of drawings for reproduction, which are quite different from working drawings in that both lines and lettering are very much thicker, so that, magnified on the screen, they are readily legible. The layman would automatically go to the expert for such services, and it is strange that other experts so often seem disinclined to make use of their colleagues in different branches of technical accomplishment. It is probably hardly fair to blame those who write the papers, for the technical societies under whose auspices the distilled essence of the speakers' experience is offered should take precautions to see that none is spoilt by the lack of efficient reproduction of diagrams, but, with the short time usually available between receipt of the paper and the discussion on it, potential contributors to the discussion should be warned to have any lettering on slides made perfectly legible.

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The First Automatic Signalling on a London Tube

The first trial of automatic signalling on a London tube took place on the Central London a year or two after its opening, but the apparatus, due to J. E. Spagnoletti, son of

the inventor of the well-known induced needle, did not appeal to the company. It was, however, installed on the Great Northern & City, but for reasons which will be apparent from an article at page 90, Sir Arthur Yorke, when he inspected it, would not agree to its adoption and required fundamental alterations to be made. These were successfully effected, the use of third and fourth rails allowing track circuit to be put in, the first instance of its use throughout a London tube line, but the brush treadle action, proposed by Spagnoletti, was retained to fulfil a new purpose and act as a lock against possible irregular track relay action. In its altered form the signalling gave good service for a long time, until an entire renewal became necessary. The G.N. & C. tube had therefore the distinction of being the first in London not only to have automatic signalling from the opening, but to have track circuit throughout and to use plain lens type light signals.

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Cleaning the Streamliners

New problems are being set in car maintenance by reason of the lengthy continuous runs and brief turn-round times of many modern streamlined trains. Several of the American diesel-operated streamliners, such as the City of Denver and the Denver Zephyr, are making daily runs of over 1,000 miles week in and week out; others, like the City of Los Angeles, City of San Francisco, Super-Chief, and El Capitan, make 40-hr. journeys of over 2,200 miles ten times in each month. Apart from structural maintenance, the cleaning is a considerable item, and is doubly important in the case of trains which depend so largely on both external and internal appearance for their attraction. One line using stainless steel cars has found that the average cost of outside and inside cleaning is \$3.60 a day, of which 75 per cent. is expended on the interior; on another, with car bodies of alloy steel, the figure is \$4.60 a day, 58 per cent. being on the interior. The interior cost in both cases is thus about \$2.70 a day, and the stainless steel bodies each save \$1.00 a day in cleaning alone. Roughly half the interior cleaning expenditure is found to be absorbed by the keeping spick-and-span of cushions and carpets. The general method is to clear both of dust and dirt with efficient vacuum cleaners, removing badly soiled spots with carbon tetrachloride or some similar specific; every three to six months a more thorough overhaul is necessary. Some railways have conceived the ingenious plan of keeping duplicate sets of carpets and cushions, one or more cars being completely reconditioned each week while the removed items are being renovated. Even with a lieover period of only two to three hours at a main terminal, there is plenty of time for making such an exchange.

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High-Pressure Boiler Construction

During the discussion of reports presented at the meeting of the Mechanical Division of the Association Railroads, Mr. A. G. Hoppe, Assistant Mechanical Engineer of the Chicago, Milwaukee, St. Paul & Pacific Railroad, mentioned difficulties in designing locomotive boiler-shells for 285 to 300 lb. pressure and said that, in addition to unnecessarily increasing the weight, single and double lap riveted seams introduce abrupt changes in the boiler section, with attendant unsymmetrical design, stress concentrations, and a tendency for cracks to develop. This is due to mechanical working and also to caustic embrittlement, which implies a combination of high stress with small leaks of water having certain chemical characteristics. Repairs to this type of construction not only keep the locomotive out of service but have other costly drawbacks. Mr. Hoppe said that designs have apparently reached constructional limits with conventional riveted boilers, in which severe forming stresses, combined with cold working and heavy caulking, intensify stress concentration, and are a potential source of difficulty. He urged the immediate use of welded boiler construction, and said that where this could not at present be permitted rules and regulations should be prepared in advance for governing the safe construction of welded boilers. He thought that such a practice should not be undertaken in the railway shops but entrusted to locomotive and boiler manufacturers having the necessary modern welding technique and equipment.

The New Railway Commission

AS we announced last week a Commission has been set up by the railways to consider post-war planning and reconstruction of the railways. This step has been taken on the advice of Sir Ronald Matthews, Chairman of the Railway Companies Association, and the Chairman of the Commission is Sir Ernest Lemon, Vice-President of the London Midland & Scottish Railway. The other members of the Commission are: Mr. C. K. Bird, Mr. K. W. C. Grand, Mr. F. A. Pope, Mr. T. E. Thomas, and Mr. F. J. Wymer, with Mr. H. G. Smith, Secretary. There is, of course, nothing new in the establishment of a Commission to enquire into railway matters, but the present body has the distinction, firstly, of having its genesis with the railways themselves, and, secondly, of having as its members essentially practical railway men. It is obviously a step which has been taken by the railway boards on their own initiative and in no way at the suggestion of the powers at present in control of the railways. Indeed, there is no reason to suppose that those authorities had any reason to know of the intention to set up the Commission.

Of the vital importance of the work which has been assigned to the newly-formed Commission there can be no doubt. At the present time there are many who view the future of the railway industry of this country with some apprehension, for it is well known that there are at work strong influences bent on its diversion from private to public ownership. Moreover, the paramount necessity during the war of subjecting all other considerations to the movement of essential traffic has inevitably had the effect of prejudicing the railways in the eyes of the more selfish and less thoughtful sections of the community. It has been appreciated, therefore, that with the end of the war, it will be necessary for the railways to face a period of some difficulty, arising not only from the cessation of heavy wartime traffics and the release of intensive road competition, and even indeed of the more extensive competition from air-transport than hitherto has been envisaged, but also from the after-effects of this long period of governmental control. It will, indeed, be necessary to some extent for the railways to plan for their re-establishment in the minds of the commercial and travelling public as the primary transport agency of the country, and in respect of passenger and freight operating facilities to give attention to such matters as the acceleration of services not only to the pre-war standard which has, of course, suffered during the period of hostilities, but indeed to exceed that level in order to cope with developments which no doubt have been made in the place of other forms of transport. This matter would be, of course, very largely a question of development along the lines which were already well established by the outbreak of the war. The mechanisation and modernisation of marshalling yards will, no doubt, be another matter which will have the attention of the Commission, and in this respect it is highly probable that the lessons of wartime operating, calling for the intensive movement of heavy traffic, will prove valuable. Indeed, the lessons to be derived from operating under wartime conditions will, no doubt, figure largely in the minds of the members of the Commission, who will also, of course, have to decide the best manner of coping with the change-over to peacetime conditions. In order that they may be able to formulate these plans, they will, of course, have to decide what the likely volume of peacetime traffic will be and by how much it will fall below that which has been operative during the war years. Other factors which no doubt will play their part will be the probable redistribution of industry and the trading and fiscal policy to be pursued by this country. Many of the problems which the Commission will have to face are by no means new, and in some cases frequent attempts have been made to attack them piecemeal in the past. The matters which formed the basis of the square deal campaign and which had reached a stage at which the Government had promised to introduce remedial legislation when war broke out, are an example.

The Commission is indeed fortunate in the choice of Chairman and personnel. Sir Ernest Lemon is not merely an essentially practical railwayman with a long record of achievement behind him as a result of his work for the L.M.S.R., but

he had proved his worth in other spheres. On the purely railway side Sir Ernest's pioneer work has included the planning and installation of production methods for the building and maintenance of locomotives, carriages, and wagons which have since been recognised by foreign observers as an outstanding development in British industry. To him, also, is due the major part of the credit for initiating the £2,000,000 scheme which was carried out a few years ago for the reorganisation of the motive power department of the L.M.S.R., involving a mass of intricate detail by means of which great economies have been effected in the cost of operating locomotive power on that railway. His administrative abilities and gifts of organisation are outstanding among his qualities. It will be recalled that in the middle of 1938 he was loaned to the Air Ministry as Director General of Production with a seat on the Air Council, and the extremely good groundwork put in by Sir Ernest Lemon has enabled his successors to build upon a sound foundation. The present vastly improved position of the British aircraft industry is a sufficient monument to the success of Sir Ernest's pioneer work in that vital sphere of national endeavour. Sir Ernest has been seconded for this work but remains a member of the L.M.S.R. organisation.

Mr. K. W. C. Grand has had a wide and varied experience, has been intimately associated with the development of the most modern ancillary business of the railways, civil aviation, and in October last was appointed Assistant General Manager of the Great Western Railway. Mr. F. J. Wymer's interest and capacity for intelligent provision has been recognised by his recent appointment as Assistant (Planning) to the General Manager of the Southern Railway, and Mr. C. K. Bird, who is Assistant Divisional General Manager (Southern Area), L.N.E.R., has considerable experience to draw upon. Mr. F. A. Pope about a year ago became Manager of the Northern Counties Committee, L.M.S.R., and previously has had considerable experience and success in investigation of railway conditions, not only in England, but in other parts of the Empire. His work in connection with the reorganisation on the Divisional System of the Nigerian Railways, and as Chairman of a committee of Indian Railway Officers set up to suggest methods of increasing efficiency and effecting economy on Indian railways will be remembered. He is known to be deeply interested in the future position of the railways. Mr. T. E. Thomas, who is General Manager (Operation), London Passenger Transport Board, will obviously be able to give of his wide knowledge of urban transport operational problems. It may truly be said, therefore, that the establishment of the new Commission not only has the merit of showing that the railway boards are alive to the problems which face their industry and are prepared to act on their initiative, but that the personnel of the Commission is a good augury for the success of its labours.

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The Paris Metro in War and Since

THE report for the period ended December 31, 1940, by the Compagnie du C. de f. Métropolitain de Paris, covers events from the outbreak of the war until that date. When war began the company's own system had a route length of 99 miles (159 km.) and 332 stations. By January 1, 1940, the length of the lines open to the public was reduced to 73½ miles (118 km.) and the stations to 171. But by April 1, 1940, the lines open totalled 78 miles (126 km.), including 198 stations. So far as the traffic was concerned, the period January 1 to June 14, 1940, showed an average of 1,600,000 passengers daily, or about 10 per cent. less than the daily average of 1938. On June 14, 1940, the day when the Germans entered Paris, the traffic on the Métro was not suspended, but only 300,000 passengers were carried—the lowest level attained since 1903 when the Métro system had a route length of only 14 miles (23 km.)—and for some time afterwards traffic maintained that low average. A few sections of the system were then closed to the public, the lines open totalling 74 miles (119 km.) with 185 stations open. Early in July, 1940, traffic began to increase rapidly and this upward trend continued during the next six months. On July 15, 1940, traffic was resumed over all the lines, 235 stations being open to the public, and in August the traffic already exceeded the peacetime average; by the end of 1940

an average of 2,800,000 passengers were carried, 15 per cent. over the 1938 average. On January 1, 1941, the system had a length of 98 miles (158 km.) with 293 stations open (294 by February 24, 1941). Only the shuttle service on the line Porte de Lilas—Pré St. Gervais, in the north-eastern region of Paris, was discontinued, and the stations then closed totalled 38. The first morning service began at 5.30 a.m. as was the usual practice in peacetime and during the whole period under review; the last services ran at about 10.30 p.m. up to June 15, 1940, and were then gradually extended to 11.45 p.m., as from September 25, 1940. It is pointed out in the report that the services were operated with only half the peacetime personnel during the whole period under review.

The bombardment of Paris on June 3, 1940, caused some damage at different points on the system, particularly in southern Paris (15th and 16th *arrondissements*) where No. 10 line (Porte d'Auteuil—Jussieu)—from the southwest of the capital to the southeast—was seriously damaged between Mirabeau and Chardon-Lagache stations, on the south section of the loop just west of the Seine; but traffic was resumed a few days later. On the Sceaux line the Luxembourg terminus was seriously damaged when the bridge carrying the line over the Paris—Chartres (*via* Gallardon) line between Massy-Verrières station and Massy-Palaiseau stations was hit; but the traffic over this section was restored within 48 hr. From the outbreak of war A.R.P. measures were built up to protect all lines and vital equipment, and 54 stations were converted to shelters for the public. Meanwhile, as many new works as possible were kept going after the outbreak of the war, and on January 1, 1940, the following were in hand:—

(a) Reconstruction of the entrances to the stations of No. 5 bis line (Gare du Nord—Porte de Pantin, in the north-east of Paris), begun in 1939 and now completed.

(b) Completion by the Département de la Seine of surface structures of the three extensions to (i) No. 8 line from Porte de Charenton, south-east of Paris, to Place des Ecoles, at Charenton; (ii) No. 5 bis line, between Porte de Pantin and Eglise de Pantin; (iii) No. 7 line, between Porte d'Ivry in the south-east of Paris and the Mairie d'Ivry, all in the suburbs. The Métro Company began the construction of the approaches to the stations of these extensions.

(c) The extension of No. 13 line (Gare St. Lazare—Porte St. Ouen, in the north of Paris, with a branch from La Fourche to Porte de Clichy, in the north-west), between Porte de St. Ouen and the Carrefours Pleyel at St. Ouen (towards St. Denis) was sanctioned. (It has subsequently been taken in hand in 1941.)

With a view to carrying on construction works the company was granted a loan of fr. 300,000,000 soon after the armistice, and a comprehensive additional programme of works was framed, including:—

(d) The extension by 344 ft. (105 m.) of the platforms of No. 1 line (Porte de Neuilly, in the west, *via* Concorde to Château de Vincennes in the east) to allow of the longer trains it is intended to run over this central line. Also, (e) the improvement of the entrances to various stations and construction of connecting subways between neighbouring lines so common on the Métro system; (f) the strengthening of certain bridges and viaducts to allow of the operation of heavier rolling stock; (g) improvement of the high-tension current distribution system; (h) completion and standardisation of the signalling system; and finally (i) the building of the rolling stock for the Sceaux line.

By the end of 1940 the rolling stock comprised 2,788 units, including 1,398 motor coaches, 1,383 trailers, and 7 electric locomotives for goods traffic on the Sceaux line. Sub-stations in service numbered 29, their installed power totalling 184,000 kW; three new substations are being installed at Neuilly, Levallois-Perret, and Montreuil. Passenger journeys aggregated 650,050,581 in 1940, compared with 649,550,851 in 1939, and 760,656,981 in 1938. Actually, the number of passengers carried in 1940 is far higher and cannot be calculated, as the members of the forces and services of the occupying power travel free of charge on the Métro system, a facility and favour apparently denied to the members of the French forces and services, as no mention of them is made in the report. Passenger receipts in 1940 totalled fr. 732,391,934—a figure never previously attained—and compared favourably with fr. 704,081,807 in 1939. Total working receipts aggregated fr. 736,451,351 in 1940, and working expenditure totalled fr. 413,745,311, leaving a working sur-

plus of fr. 322,706,040, as compared with fr. 157,572,241 in 1939, fr. 114,997,735 in 1938, and fr. 61,807,260 in 1937. As a consequence of the drastic curtailment of the bus and taxi services, the Métro is carrying an ever-increasing traffic.

Victorian Railways in 1940-41

THE Victorian Government Railways enjoyed a most satisfactory year ended June 30, 1941. After meeting all expenses there was a surplus of £26,594, the first for 16 years. Revenue totalled £11,330,220, the highest figure for 11 years and £1,387,771 more than in 1939-40. One of the most striking contributory sources of this improvement was an increase of £972,005 in passenger receipts, £702,746 from country and £269,259 from suburban traffic, due to heavier defence traffic, more employment, less interstate shipping, and petrol restriction upon road movements. Despite the fact that wheat revenue was £249,993, or 45 per cent., lower than in 1939-40, due to the harvest failure, this decline was more than balanced by increased revenue over that of the previous year from all other goods business, namely £393,127. Working expenses increased by £920,754, but this figure included £325,000 more subscribed to the Renewals and Replacement Fund £277,000 for higher salaries and wages, £165,000 for enhanced costs of materials, including coal, and an extra £50,000—making £100,000 for the year—towards repayment of the £300,000 special advance made from the Public Account in 1937-38 for deferred maintenance and renewal works. A record provision of £618,823 was made for depreciation.

These were the salient features of the Commissioners' annual report, which pointed out that though funds were available for an increased works programme, staff and materials were not—owing to enlistments and war work—and consequently the heavy renewal and replacement work which should be undertaken could not be carried out on an adequate scale. Much of the rolling stock was now obsolete and unsuitable for present and prospective traffic, a difficulty that would be greatly accentuated should a state of emergency arise. This latter remark was penned some months ago and the war has taken a sudden turn towards Australia during recent weeks. It is to be hoped, therefore, that the Victorian railways will not be too seriously handicapped in this respect should matters go from bad to worse in the

Pacific. Continuing, the report mentions that the construction of 10 "X" class engines, 400 wagons, and 20 "Z" class vans, as a war measure, would go some way towards meeting the shortage, but a greatly increased works programme was necessary as soon as possible. During the year under review, 17 new "K" class locomotives were placed in service and others were nearing completion. The new 4-8-4 "H" class engine was giving excellent service, hauling 820 tons—as compared with only 520 tons in the case of other locomotives—in fast goods service between Melbourne and Wodonga.

The traffic problems of rush hour peak periods were being solved to some extent by staggering school and public duty hours, and altering the timing of picture theatre programmes. But no great relief would be obtained until major works in the form of doublings between Flinders Street and South Yarra and Hawthorn could be undertaken and more rolling stock could be provided. The introduction of one-class trains, though it might have certain advantages, would involve considerable loss of revenue—because over 40 per cent. of the season-ticket holders and more than 33 per cent. of suburban passengers travel first class—unless the second class fares were substantially raised. Petrol rationing had not greatly reduced road competition. About 1,400 officers and other railway staff had joined the fighting services, and 202 had joined the Home service. The services of many others had been lent for special duties to Federal departments.

During the year under review, the Railways Department continued its co-operation with other bodies in research to improve design and establish standards for gas producers for use on railcars and road motor vehicles. On June 30, 1941, four railcars and 11 road vehicles had been equipped with producer plants, and arrangements had been made to equip all other vehicles likely to show appreciable saving in liquid fuel without adversely affecting their operation. Due to a virtual cessation of ocean travel from Australia, and the curtailment of coastal shipping, local tourist resorts had received a substantial stimulus, and the Victorian Government Tourist Bureau experienced a year of unprecedented activity. Its revenues showed an improvement of about 30 per cent. as compared with those in 1939-40. At the Chalet, Mount Buffalo National Park, the popular slack-season tariffs introduced in 1939-40 gave excellent results, and the average number of visitors throughout the year was 141 as compared with 118 in 1939-40 and 70 in 1938-39.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Withdrawal of Restaurant Cars

London, S.E.3
December 16, 1941

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your editorial paragraph (page 606 of the December 12 issue) on the withdrawal of restaurant cars fails to mention one important factor—that the principal object of restaurant car cancellation is surely the opportunity it gives for the inclusion of some non-corridor vehicles in trains which do not make long non-stop runs, and this of course is a further argument for the removal of cars from all semi-fast trains. Yet, although a service like the 8.30 a.m. from Carlisle to Euston has, quite fairly, lost its restaurant cars, it still has no non-corridor stock, and requires to be "relieved" from Preston to London by another train which still carries cars. Without suggesting any such Spartan methods as were adopted in the last war by the Great Northern, when London suburban sets worked on fast and semi-fast services between London and Leeds, a proportion of modern non-corridor stock—with 108 seats in a 29-ton vehicle as against the 42 or 56 seats in a 31-ton corridor—would assist matters considerably, and it will be remembered that in 1917 and 1918 expresses were leaving Euston with over 1,100 seats in quite a moderate tonnage, and with a small amount of corridor stock, while on the Midland and Great Central, where restaurant cars still ran, nearly all the expresses carried some non-corridors.

But your readers who are familiar with the railway working of the last war must see much in the publicity methods and in the operating of the railways today to cause them surprise and

uneasiness. Although the railways are now much more conveniently grouped than in 1914 for operating as one unit, with fewer stations which used to be regarded as frontiers and with far better facilities for regulating, certain alternative, and subsidiary routes still seem to be lightly occupied while others are overburdened, and punctuality suffers by impracticable timings through stations, such as Carlisle, where traffic exchanged between the various divisions of the groups.

Yours faithfully,

R. E. CHARLEWOOD

[Our correspondent may have overlooked the fact that except for local and branch line traffic, British Railways have for many years ceased building non-corridor stock. Moreover, the adoption of Mr. Charlewood's suggestion would deprive long-distance passengers of lavatory accommodation.—Ed. R.G.]

RAILWAYMEN'S AID FOR RED CROSS.—By giving a penny each week from their wages 300,000 British railway workers have contributed nearly £100,000 to the Red Cross Penny-a-Week Fund. Of this amount L.M.S.R. employees have given £43,572, L.N.E.R. £31,601, S.R. £10,906, and G.W.R. £10,687. The total is sufficient to cover the cost of 100,000 food parcels for prisoners of war, 20 fully equipped 6-seater motor ambulances, 25 complete X-ray units, 10,000 blankets, 20 emergency operating theatres, as well as large quantities of medicines, drugs, lint, bandages, and hospital clothing.

THE SCRAP HEAP

The latest figure for the number of employees on railroads in the U.S.A. is 1,211,258.

Of 244,000 articles left in London Transport vehicles and on the board's premises in 1941, there were 47,000 umbrellas, 26,000 pairs of gloves, 30,500 handbags, purses, and similar articles, and 48,000 tin hats, gas masks, and rifles.

AMERICAN CIVIL WAR TRAIN WHISTLES

"I well remember him [the late Sir Francis Campbell, first principal of the Royal Normal College for the Blind] telling us pupils about the American Civil War. . . . He said that many of the engines which drew the troop trains were fitted with perhaps an octave and a half of steam whistles operated by a keyboard. These trains, packed with soldiers, used to leave Boston with the "Whistle Organ" playing "John Brown's Body" and the men singing the battle hymn of the Republic to this tune [for which the late Mrs. Julia Ward Howe had written it]. Sir Francis said that the whistles could be heard miles away and that the noise was awful!"—*From a letter by Dr. Alfred Hollins, organist of St. George's Church, Edinburgh, to the "Scotsman."*

The avarice of railway directors and the conceit of theoretical engineers have combined to produce more than two-thirds of the railway accidents we have recently had to deplore. . . . No holiday school-boy busy about his playful ramparts would expect dry sand to remain on the perpendicular without extrinsic support, and the man who acts as if clay would so support itself is not half so wise. But so have acted the constructors of every railway line throughout Great Britain. I have, in friendly converse with more than one railway director, alluded to this natural rule,

which an hour's observant walk on Hampstead and Highgate hills would disclose, but was only laughed at or knocked down by the authority of some professional engineer.

. . . . By the press and Parliament alone can railway directors be compelled to humanity.—*From "The Times" of December 30, 1841.*

The coal trade of Whitehaven is very extensive. Several of the seams in which this useful mineral is found lie below the bed of the sea, and have been wrought for many years with such persevering enterprise, that the mines present the appearance of a subterranean city. Rail-roads are laid for transporting the coals from the mines to the harbour. Some of the pits are three hundred and twenty yards in depth, extending to a great distance under the ocean; so that ships of large burden sail over the miners' heads.—*Extract from "Westmorland, Cumberland, Durham, & Northumberland, Illustrated," by Thomas Rose. Published by Fisher, Son & Co., London, 1832.*

RAILWAYS IN RUSSIA

The hopes of approaching peace, which continue to increase here, have given a surprising stimulus to business; but the bad state of our internal means of communication is every day more and more seriously felt by the commercial and manufacturing world. A single line of railway, well constructed, would render more service than the millions of carts drawn by oxen which annually traverse our dreary plains, leaving one-half of their teams behind them. Unfortunately, with the exception of the railway from the Prussian frontier, the rapid completion of which has been ordered, the only one for which surveys have been commanded by Government is that which will go from Moscow to Odessa, passing through the rich districts of Orel, Toula, Koursch,

etc. When companies shall have been formed for the establishment of other lines, they will, it is said, be also bound to render the Dwina and the Dnieper navigable.—*Extract from a letter written from St. Petersburg, March 18, 1856.*

AN EMERGENCY DANGER SIGNAL

The railwayman's red tie, first issued on the London & South Western Railway, was withdrawn at the end of 1926. This emergency danger signal was in the form of a neckerchief a yard square, and it was replaced by a blue tie for all grades. The old red tie was part of the uniform issued for all grades on the L.S.W.R., and no doubt served a useful purpose in cases of emergency where it was necessary to stop a train.

TYPES OF C.P.R. STAFF ON POSTCARDS

A new series of coloured picture postcards is now on sale at the stations and hotels of the Canadian Pacific Company, illustrating the different types of employees in the service of the railway. The artist is Miss Kathleen Shackleton, and the cards represent male and female employees in all branches of the company's service, including railways, steamships, hotels, and agencies. The artist has taken for her models the employees as they appear in their working hours, and the series, which consists of 48 cards, or two sets of 24, will serve a useful end in giving the travelling public a greater understanding of those on whom their safety and comfort so largely depend.

An extract from "The Fact Book," which has been kept by the Divisional Engineer, Plymouth, G.W.R., and his predecessors for nearly a century.

Newton,

August 8, 1868

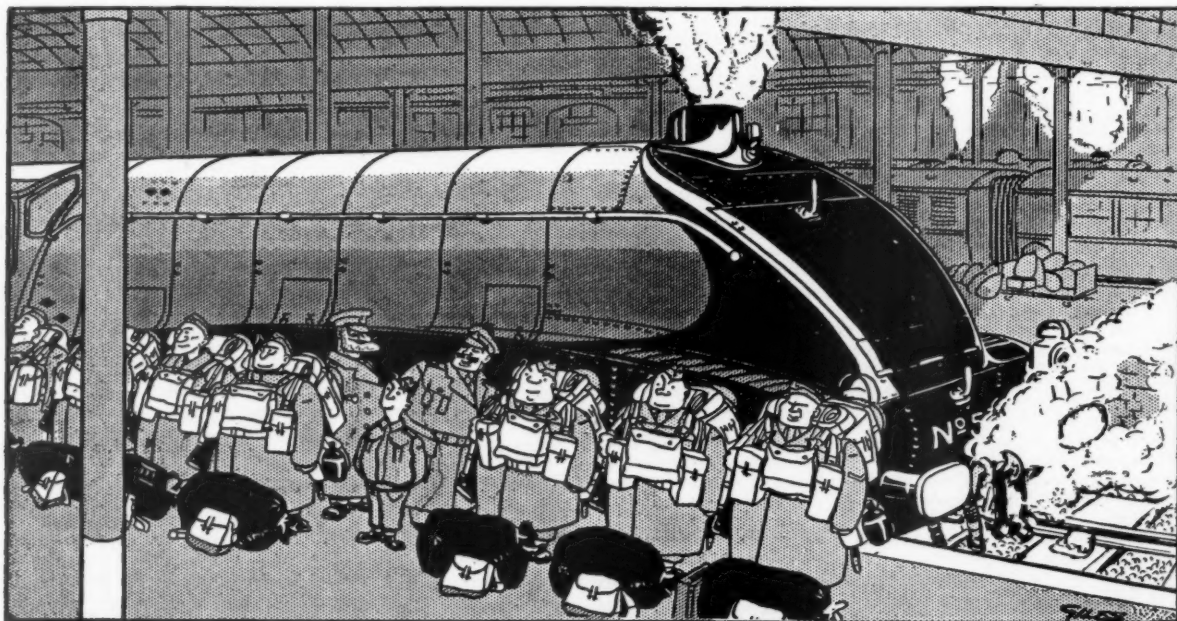
Sir,

I beg to say that the cost of re-lining a first class carriage complete is £112. 0. 0.

Yours obediently,

(sd) I. Maddock

P. I. Margary Esq.,



"So you sent your luggage in advance, Private Abercromby?"

[From "Reynolds News"]

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

WESTERN AUSTRALIA

Water Supplies

As a result of light rainfall during the winter of 1940, and only sparse rains during the following summer months, the water position, both as to railway supplies and private consumption, became extremely precarious in many country districts throughout the State; water haulage by rail was necessary in great quantities, totalling in some weeks over 1,500,000 gallons. The Great Southern railway area was particularly hard hit, the weekly haulages to the three main railway depots, Katanning, Narrogin, and Wagin, for locomotive purposes, approximating over 500,000 gallons.

It is, however, satisfactory to record that during the 1941 winter bounteous rains fell in most districts, and as a result of increased storage supplies, water haulage was discontinued in all districts, although it is expected that it will have to be resumed in some parts during the summer.

In addition to improving the water supplies, the rains have been of such consistency as to insure an excellent harvest, and country residents are looking forward to this summer season with confidence. The railways will doubtless be called on to utilise their full capacity to handle expected harvest traffic.

Improved Passenger Service on the Great Southern Section

A new fast service has been inaugurated between Perth and Albany. The transfer of an additional diesel-electric railcar, with trailer, to the Great Southern Section has enabled the 340 miles between Perth and Albany to be covered in 12 hr. 40 min. The railcars previously ran to Katanning only (225 miles), on three days each week, returning on the following days. They now leave Perth at 8.15 a.m. daily (Sundays excepted) terminating at Katanning on Mondays, Wednesdays, Thursdays, and Fridays, but going through to Albany on Tuesdays and Saturdays.

In addition, the evening steam trains between Perth and Albany—in both directions—which previously ran as mixed trains on certain days for part of the journey, have been speeded up and scheduled at passenger speed throughout for the whole journey.

The new fast day service is welcomed by passengers to and from intermediate stations where the steam trains call in the early hours of the morning, and the patronage already afforded the diesel-electric cars indicates that they will be very popular with the travelling public. In view of the restricted use of road motor vehicles due to petrol rationing and other causes, the speedier service on the Great Southern Section will be of great benefit not only to residents of districts served by the line, but also to the many travellers and visitors to those centres.

Hikers' Trains

Due to the limit set on pleasure travel by road by petrol restrictions, special hikers' trains during the past few months have proved extremely popular. They are run on Sundays at the low fares of 2s. 6d. for distances up to approximately 40 miles, and 5s. up to 80 miles. The trains start from Perth and the special fares apply from any suburban station. On a recent hike special to York, a distance of 78 miles from Perth, there were over 3,100 passen-

gers, despite inclement weather, and four trains were necessary to accommodate the excursionists. Other outings have been almost equally successful. It is the department's practice to select a route for the actual hike, having regard both to scenic beauty and suitability for walking; distances vary from five to eight miles. At a suitable point a lunch site is located, and here supplies of hot water and fresh milk are available free to the hikers.

CANADA

Progress at C.N.R. Montreal Terminus

Work is under way on the first escalator at the new Canadian National Railways Montreal terminus. This escalator will operate from the Dorchester Street bridge, from an entrance on the north-east corner, close to the St. James Club. There will also be a staircase there. Work on the escalator has followed the virtual completion of the wide thoroughfare through the terminus area, to be known as East Street, linking Lagachetiere Street with Cathcart Street. There will be a number of escalators in the new terminus when it is fully operative.

Already there are three entrances to the terminus from the Dorchester Street level, two in the middle of this thoroughfare at the western end, and a third just around the north-west corner, from Mansfield Street. Concrete work is practically completed.

When the work on East Street is completed, this thoroughfare will be opened for public use, even though the station may not then be ready for opening. This will provide the public with a new artery from Lagachetiere Street to the uptown area. The terminus is expected to be opened for public traffic some time later this year.

Record Freight Car Loadings for Decade

Freight car loadings by the Canadian railways in October, or for the four weeks ended November 1, were the heaviest for over a decade. The total was 279,320 cars, representing an increase of 31,747, or 12.8 per cent. over the like period of 1940. The previous record month was in 1940 when in the four weeks ended October 5, 250,045 cars were loaded.

CEYLON

Census to Reduce and Adjust Train Services

As the new timetables will take some time to prepare, print, and publish, it has been decided to institute a preliminary reduction and readjustment of passenger train and railcar services. With this end in view a census has been taken of the numbers of passengers travelling by all trains throughout the system, so that trains and railcars running empty can be cancelled forthwith, and in order that others that are overcrowded may be strengthened. This action is also being taken to conserve rolling stock and reduce wear on rails and other equipment without delay.

Cancellation of Goods Rates Concessions

As another step towards the reduction of the great deficit on the Government Railway, all concession goods rates were withdrawn as from October 1, including reduced rate contracts between the railway and

firms or individuals. All goods carried are now subject to general classification rates, and the payment of rebates to consignors of large volumes of goods on contract at the end of the period of contract has ceased. The practice of charging specially reduced rates for large consignments was initiated a few years ago to attract more goods traffic to the railway and combat road motor competition. It has continued in force until now despite greatly increased working expenses due to the rise in costs of coal and materials of all kinds.

JAPAN

New Stations at Osaka and Kobe

For the projected "bullet" train service between Tokyo and Shimonoseki, new stations are to be built at Osaka and Kobe. The Osaka station will be on a large scale, and, as well as accommodating the existing Tokaido line traffic and that via the new route, will serve the private inter-urban tramways and the underground line. It will be situated about 3 km. westwards of the existing Higashi Yodogawa station on the Tokaido line. It is designed in tiers or floors, the super-express traffic platform being on the fourth floor level, about 50 ft. above the foundations. The other floors will accommodate the Tokaido line traffic, inter-urban tramways and Underground passengers; the underground system will be extended to the new station. The new Kobe station will be built to the north of the city.

SPAIN

Proposed Central Station at Zaragoza

The Zaragoza Town Council has revived the proposals for a central station in the city. A considerable distance separates the two stations of the Northern and M.Z.A. systems, and although they are connected by a loop line they are actually at the two extreme ends of the city, and on opposite sides of the river. The scheme put forward by the town council would provide a single joint station, on or near the site of the present terminus of the Caminreal-Valencia Railway.

Slower Trains

The effect of inferior fuel is shown in the timings of the express trains between Madrid and the principal provincial cities and the frontier. Before the civil war the use of Spanish coal was obligatory, but the railway companies were permitted to import up to 15 per cent. of their total requirements for use on express passenger services. Now that sufficient quantities of foreign coal are no longer available, the running of all main line trains has been slowed down. For example, the *rapide*, which in 1936, before the civil war, left Madrid at 10.30 a.m., arriving at Irun at 8.15 p.m., covering the 631 km. (392 miles) in 9 hr. 45 min., at 40.3 m.p.h. including stops, now leaves at 9 a.m., and arrives at 9.5 p.m., taking 12 hr. 5 min., at 32.4 m.p.h. The Sud Express, over the same route, has suffered an even greater deceleration. Similarly, the express from Madrid to Barcelona, which used to leave at 9 a.m. and arrive at 9.50 p.m., 12 hr. 50 min. for the 685 km. (426 miles) an overall speed of 33.3 m.p.h., still departs at 9 a.m. but arrives at 10.49 p.m., taking one hour more, at only 30.9 m.p.h. Finally, the Seville express, departing at 10.10 p.m. and arriving at 8.20 a.m., in 1936, or 10 hr. 10 min. for the 573 km. (356 miles), at 35.6 m.p.h., now takes from 10 p.m. to 9.20 a.m., 11 hr. 20 min., at the rate of only 31.4 m.p.h. These timings are quoted from the

timetables for the months of July, 1936, and 1941.

Barcelona—Tour de Carol Traffic Resumed

Traffic has now been resumed between Barcelona, through Ripoll and Puigcerdá, and Tour de Carol, over the French frontier, after being suspended since October, 1940, when the floods in the province of Gerona caused serious damage to long sections of the line and carried away several bridges. There are still transshipments at La Farga and Ripoll, but the work of re-establishing through communication is proceeding rapidly. The three bridges, the Manlleu (149 m. or 489 ft. in length), Torelló, and Cogullera (both these last of 80 m. or 262½ ft. long) were destroyed by the Republican forces during the civil war.

FRANCE

Interim Dividends of the French Railway Companies

The Chemin de Fer du Nord is to pay an interim dividend of 5 per cent. on its ordinary share capital, and 3 per cent. on the bonds. The Chemin de Fer du Maroc is to pay an interim dividend of 3 per cent. as compared with 2·7 per cent. a year ago.

Serious Lubricant Position on the Railways

The shortage of lubricants available for the railways has again considerably worsened and is likely to prove a more difficult problem than the coal position. In the last full peace year, 1938, the Société Nationale des Chemins de Fer consumed 28,000 tonnes of lubricants, almost the whole of which was imported from the U.S.A. and from the Soviet Union, two sources no longer available to France. In the course of the past years when the shortage of lubricants became apparent, a certain economy in their consumption was effected by reducing the speeds of the trains; thus the maximum average speed of goods trains was reduced from 75 km. to 65 km.p.h. and that of passenger trains from 120 km. to 100 km.p.h. A further reduction in the consumption of lubricants was obtained by altering and improving the arrangement of the lubrication and other equipment of the locomotives.

Use of Vegetable Oils

The mixing in certain fixed ratios of various vegetable oils with the normal lubricants, also resulted in economy in consumption. Certain of these mixtures contain as much as 50 per cent. vegetable oils, which have also been added to cylinder oils though in small proportions, and only if the mixtures were intended for use where temperatures did not exceed 200° Centigrade; above that limit mixtures containing vegetable oils cannot be used for locomotives, it is stated.

At the present moment all locomotives of the Pacific and Mountain types use lubricants to which castor oil has been added, and in certain cases pure castor oil only is used. With a view to securing a sufficient supply of castor oil the Société Nationale des Chemins de Fer has concluded important contracts with castor oil producers in France and the available French colonies, and has even granted financial aid to farmers in order to develop the cultivation of castor oil plants.

Control and Use of Tank Wagons

A new law, concerning the use of tank wagons on all French railways came into force early in December, 1941. All concerns and persons owning tank wagons are bound to register them with the newly-formed "Groupement professionnel des

Exploitants de Wagons réservoir" and are to place their wagons at its disposal, either at Lyons—for the un-occupied zone—or at Paris—for the occupied zone—within a month from a date still to be fixed by the Secrétariat de l'Etat aux Communications. This groupement is to control the use of the tank wagons, and requests for their allotment will have to be addressed to its headquarters either at Lyons or Paris.

For the transport of wine by means of tank wagons, both within France or for export, the Secrétariat de l'Etat aux Communications is to appoint a special commission to fix monthly programmes for the allotment of such tank wagons.

FRENCH NORTH-WEST AFRICA

The Trans-Sahara Railway

The first section of the Trans-Sahara Railway, connecting Bou-Arfa via Kénadza to Colomb-Béchar, a distance of 130 km. (80·7 miles), was officially opened on December 9, 1941. Kénadza is a few miles to the north-west of Colomb-Béchar and is the centre of extensive coal workings with an output of 10,000 tonnes of hard coal a month. A mineral line has existed between Kénadza and Colomb-Béchar for a number of years, so that over this section only a certain amount of reconstruction work was needed.

It is now reported that the Bamako-Koulikoro section is already being extended to Segou, where it will eventually meet the Trans-Saharan line from Colomb-Béchar [see article and map on pages 558-9 of our issue of November 28 last—Ed., R.G.].

The surmise is that the branch line to the port of Ibadjan, on the French Ivory Coast, will take off at Segou and not run to Mopti.

It is believed that the desert section will require only one man for each 10 km. of line, and that crossing loops for the desert section will be fixed 200 km. apart. The diesel-electric locomotives proposed are said to be designed for a fuel capacity making possible runs of over 700 miles without refuelling.

SOUTH AFRICA

Central Welfare Committee Set Up

A central welfare committee has been established in the General Manager's office at headquarters. The committee will be responsible for examining and reporting to the management on the following subjects: Health work, welfare work, physical training, St. John Ambulance work, safety first movements, nutrition clubs, vegetable clubs, sporting facilities, milk and butter schemes, the hostel system, communal residences, workshop amenities, workshop hygiene, model villages, institute activities, balanced feeding and housing of the administration's non-European staff, and native welfare generally.

It will also be the duty of this committee to keep in constant touch with this work with a view to seeing that all the movements are carried on efficiently and along sound lines, and to guard against waste and overlapping.

SWEDEN

New Gothenburg Central Station

The State Railways recently decided to proceed, within a short time, with the construction of a new Central station building at Gothenburg, to replace the present one which is deemed to be out of date. It is intended to use the upper floors of the new

station building as an hotel. The only station at present embodying an hotel is Haparanda, on the Finnish frontier.

New Connecting Link at Gothenburg

Another project at Gothenburg, which will be taken in hand shortly, is to provide a direct connection between the Borås railway and the State Railways Savenäs marshalling yard. The principal feature of this work will be the erection of a long viaduct estimated to cost Kr. 1,200,000.

Further Electrification

The electrification of the Kil-Daglösen section of the Bergslagen Railway standard-gauge main line from Gothenburg to Falun was completed in November last (1941). Kil is 232 km. (144 miles) north of Gothenburg and the distance to Daglösen is 61 km. (39 miles).

ITALY

Electrification

The electrification, recently completed, of the 127-miles Bologna-Verona-Trento main line has increased the total length of the electrified system to 5,423 route-km. (3,368 route-miles), or to 60 per cent. of the proposed total electrified length of 9,001 route-km. (5,589 route-miles) or to 32 per cent. of the whole of the country's railway system which is now stated to be 17,050 route-km. (10,588·6 route-miles) inclusive of the railway system in the Italian-occupied Yugoslav regions.

BULGARIA

Increasing Number of Accidents

A recent circular issued by the State Railways' management points to the increasing number of accidents occurring on the country's railways in recent months. The circular enjoins executive railway officers to take immediate steps to reduce the frequency of these accidents. It is thought that the increase is due not only to the prolonged strain on the railway personnel—now greatly reduced since a considerable percentage has been called to the Colours—but also to probable sabotage. The State Railways have suffered great material and financial damage through these frequent accidents.

JUGOSLAVIA

New Croatian River Shipping Concern

The Croatian puppet state's latest transport venture was the formation of a river shipping company in the second half of November, 1941. It is a State-controlled enterprise, the bulk of the capital being held by the State; the balance is shared between banking, financial, and industrial circles, with the approval of the State. The new concern, known as "Hribrod," will enjoy monopoly rights for river shipping inside Croatia. It will be recalled in this connection that Croatia has been allowed by her Axis masters a share of the right bank of the Danube stretching from, and including, Zemun in the east—3 miles away from Belgrade—to a point 145 miles upstream beyond Aljamaš, close to the Hungarian frontier and near the mouth of the river Drava, the northern bank of which is Hungarian territory. The Sava river, which flows into the Danube at Belgrade, is navigable for steamers up to Sisak, a distance of 371 miles from Belgrade, and rafting is done as far upstream as Ljubljana. Finally, there is the Drava, the river marking the Hungarian frontier, which is navigable for steamers up to Barcs and for rafts beyond the country's northwestern frontier.

NEW ROUTE INTO NEW ORLEANS

Missouri Pacific and Texas & Pacific trains will enter New Orleans via the New Orleans Public Belt bridge—instead of by Gouldsboro train ferry

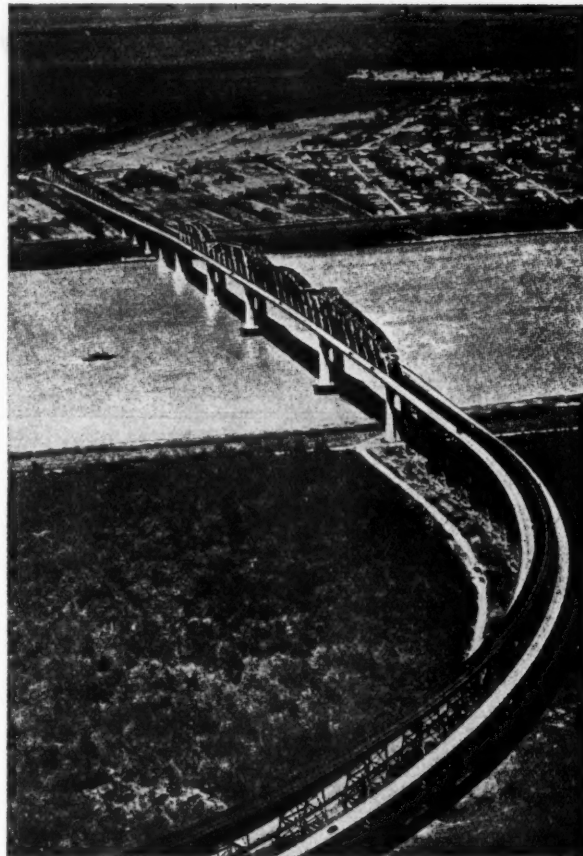
AS briefly announced in the Overseas columns of our issue of October 31, the Gouldsboro—New Orleans train ferry is to close down, and Missouri Pacific—Texas & Pacific traffic is to be worked into the city of New Orleans by way of the Southern Pacific Railroad Public Belt or Huey P. Long bridge (shown on the accompanying map as the New S.P. bridge) over the Mississippi, nine miles above that city. This bridge is not to be confused with the Mississippi bridge at Baton Rouge, recently completed about 80 miles above New Orleans, and which was described in our issue of October 3 last.

Preliminary arrangements, already well in hand, include an extension of the terminal arrangements at Thalia Street passenger and goods stations in the city of New Orleans and new goods marshalling accommodation at Avondale on the west bank of the Mississippi. A new locomotive depot at Thalia Street is also being built, and embodies a rectangular shed and turning triangle in place of the more usual American practice of a roundhouse and turntable. A feature of the new depot is a direct steam plant enabling locomotives to raise a full head of steam in 20 min. from cold. The reduction of smoke nuisance is another important feature of this plant, which is being moved from the present terminal locomotive depot at Gouldsboro to Thalia Street.

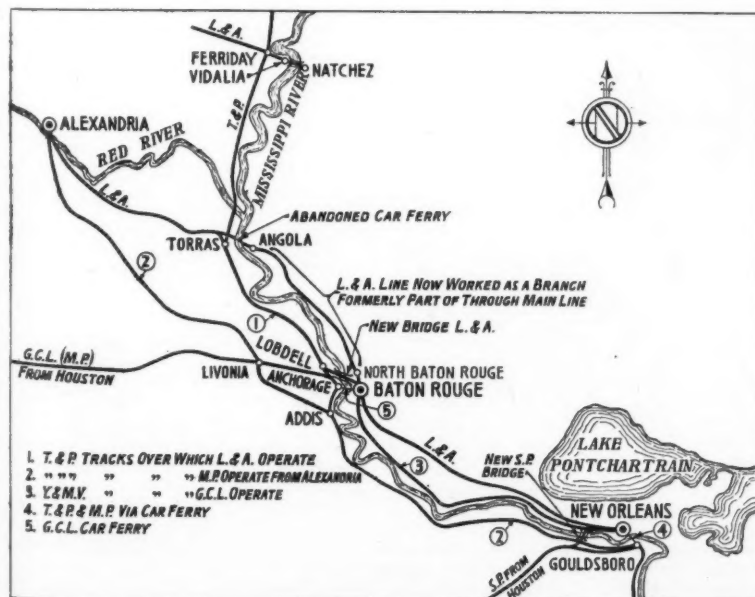
Advantages of the Bridge

The use of the bridge will provide both quicker and more dependable services, will reduce costs, and eliminate the many disadvantages of the ferry. These include delays caused by winds and fogs, also the limited capacity of the steamers, which are unable to cope with peak traffic rushes. The ferry terminals will, however, be retained as a stand-by in case of emergency. A further gain will be direct interchange with Missouri Pacific and Texas & Pacific services entering New Orleans from the east and north-east.

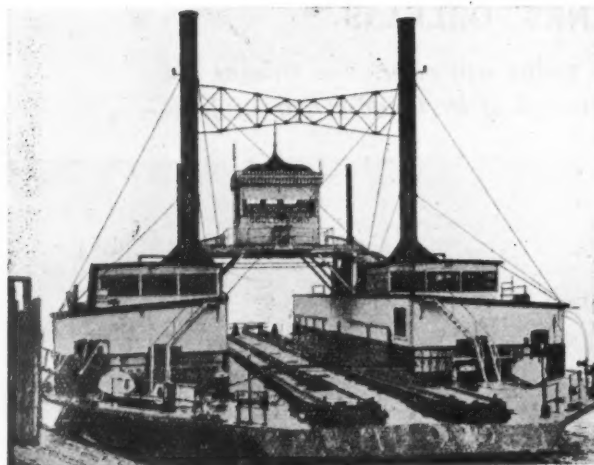
The bridge, which was opened with great ceremony on December 16, 1935, was at that time the only one spanning the Mississippi in the 370 miles between Vicksburg and the mouth of the river. In order to pass shipping beneath it, it was constructed with a headway of 165 ft. above mean low water level, with the result that very long steel trestle



Above: Aerial view of Public Belt bridge spanning the Mississippi river near New Orleans which will be used by Missouri Pacific freight and passenger trains as a result of the extensive revision in terminal facilities on both sides of the river, and discontinuance of the ferries "Thorne" and "Gouldsboro"



Left: Diagram showing the position of the S.P. bridge and the M.P. and T. & P. approach from Alexandria



The well-known train ferry "Gouldsboro" which for many years has been in service at New Orleans

NEW GERMAN SLEEPING CARS

Three experimental types, built by Linke-Hofmann and Wegmann to Reichsbahn orders for Mitropa service

GERMAN sleeping cars operated by the Mitropa normally have compartments with two beds each; as first class compartments they are used for one passenger only (on the lower berth), while two passengers share each compartment if used for second class. In our issue of September 5, however, we recorded (at page 230) that the Mitropa is stated to have placed in service recently the first of a new type of composite first and second class sleeping car, with single-berth compartments. The first experiment in this direction dates back to 1924, but the present vehicle is one of two designed and ordered in 1938; their construction was held up by the war. An innovation is the single-berth second class compartment. The old cars had 11 compartments accommodating from 11 all first, to 22 all second class passengers.

From further information which has now come to hand, it appears that the Reichsbahn, in co-operation with the Mitropa, has evolved two new types of sleeping cars in which second class travellers will have at their disposal single-berth compartments. One of each type left the builder's works only recently, one by Linke-Hofmann works of Breslau and the other by Wegmann of Kassel. The Linke-Hofmann car has a side corridor. Every compartment has one bed only, but, with a view to fitting in as many compartments as possible, their width is reduced, and, to allow of sufficient elbow-room for purposes of dressing, etc., the bed is collapsible and so is the wash-stand. During the day the bed is folded together and serves as an upholstered seat near the window. During the night the seat forms the mattress. The weight of the bed is compensated by springs in such a way as to be folded together easily by the passenger himself in order to secure more space within the compartment. The wash-stand and mirror is placed against the partition dividing each two compartments. Pairs of compartments may be connected by opening a sliding door in the partition. The length of the new car is 26 metres (85 ft. 4 in.); it is thus longer than the usual type. This new Linke-Hofmann vehicle has ten single-berth second class compartments and four first class compartments—the latter of the usual type with two berths each. Thus the carriage offers accommodation for either four first class and ten second class passengers, or for 18 second class travellers, of whom eight are in two-berth compartments. The accommodation offered is thus less than in the old type of carriage.

The Wegmann type of vehicle offers another solution;

viaduct approaches were necessary, the whole structure including approaches being 4.4 miles in length. It was built by the Southern Pacific Railroad at a cost of \$12,500,000 or nearly 25 per cent. more than the Baton Rouge bridge.

The ferry is worked by two steamers, the *Gouldsboro* and *Thorne*. The former was built in 1863 as the U.S. Monitor *Chickasaw*, and is now the last surviving ironclad of the civil war. Built at St. Louis, its first engagement was at Fort Morgan, and it also took part in the battle of Mobile Bay. There it gained honour and distinction and, though hit, was undamaged, while it fired 52 11-in. solid shot into the ironclad *Tennessee*. The result of the engagement was inconclusive, except in proving the value of steel ships. In 1882 the *Chickasaw* was purchased by the Texas & Pacific Railroad, converted into a ferry steamer, and renamed *Gouldsboro*. The machinery was long ago changed, and the boilers were renewed in 1929, so that little but the hull of the monitor now remains. The *Gouldsboro* has been used mainly as a stand-by or reserve to the much larger *Thorne*, which carries almost all the passenger cars. It was built in 1898, rebuilt in 1915, and accommodates either 17 40-ft. freight cars or 8 75-ft. passenger cars. The two craft together at rush periods carried, on an average, 600 cars daily, and enjoyed an enviable safety record.

this type is of the same length as the Linke-Hofmann, namely, 26 metres (85 ft. 4 in.), and also has a side corridor. In order to provide a greater number of second class single-berth compartments, they are built on two levels. A three-step ladder leads from the corridor to the upper compartments, while the lower ones are reached from the corridor by stepping down one step; the entrances are close to one another. This novel arrangement has enabled 12 single-berth second class compartments to be fitted in the same space as accommodates only ten in the Linke-Hofmann type of car. There are also four first class compartments of the usual type. The capacity is thus four first class and 12 second class passengers in single-berth compartments, or 20 second class passengers if eight are accommodated in the two-berth (first class) compartments. The height of the compartments is stated to be sufficient for a passenger to stand upright. During the day the sofa of the second class compartment affords seating accommodation and occupies the whole of the width of the compartment; for the night it is transformed into a bed, with the back of the sofa used as a mattress. Although of reduced height, the windows of the compartments are wide. Those of the lower compartments may be lowered completely, while those of the upper compartments may be lowered only half way. The latter windows fit partly into the arched section of the roof. Every second class compartment has a wash-stand with running hot and cold water, as in the old type of car.

Two more second class single-berth compartment sleeping cars of still a further type have been ordered by the Reichsbahn for the Mitropa. These are to be built by Linke-Hofmann, and differ from the Wegmann 1½-storey car in that the compartments will be on two entirely different levels, with the lower floor sunk between the two bogies. Thus the two storeys will take advantage of the full loading gauge of the vehicle. Access to either lower or upper level will be gained from the side corridor by means of ladders leading three steps down or up. The length of this vehicle, also, will be 26 metres (85 ft. 4 in.), but the arrangement will permit of 22 single-berth second class compartments being fitted.

The *Frankfurter Zeitung* of July 16 last reported that the Reichsbahn had placed orders for the delivery of a number of such modern sleepers, but it seems improbable that the orders will be executed—at any rate for any large quantity—during the war.

CONCRETE SLEEPER BLOCKS, L.M.S.R.

A simple substitute for timber in low-speed sidings

THE demand for new sidings prompted the production of a very simple concrete sleeper block which should be serviceable for use where traffic moves only at very low speeds, as, for example, in standing sidings and sidings in factories. On the Scottish Division of the L.M.S.R. such sleepers have been in production for some time past in large quantities by female labour at Mossend, near Glasgow, on a site adjacent to a loading bank.

holes into the concrete by gentle pressure. In the second case the difficulty of the ferrule is overcome by first driving the ferrules hard home into the chair, after which the chair is placed on a heavy timber block and the three chair screws are then driven hard through the ferrules into holes in the timber block. The chair, with the chair screws now firmly fixed, is then ready to be placed on the newly moulded concrete.

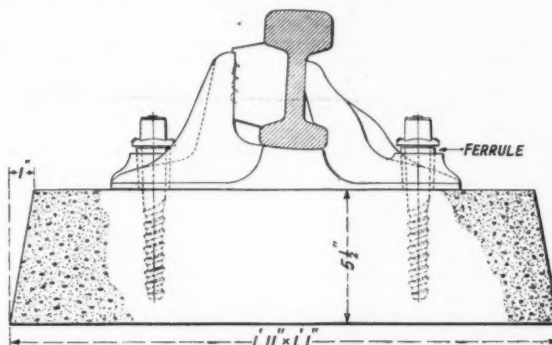
Both types of sleeper block have been very successful and have been largely used. It has been found that the fixings



Placing chairs on newly-poured concrete in moulds

The cross-section shows that the blocks consist of plain unreinforced concrete; they are moulded in sets of six. The concrete used is a 4 : 2 : 1 mixture, and the moulds are moved after 12 hours. In a further 12 hours the blocks are ready to be placed on the stacks, and a few days later may be loaded and dispatched to the site. Gauge is maintained in sidings, where these concrete block sleepers are used, by second-hand wooden sleepers, at intervals according to the nature of the traffic. Wooden sleepers are also used at the rail joints.

Two types of concrete sleeper blocks are in use, one using old second-hand C.R., G. & S.W., or H.R. chairs with four plain spikes, and the other using second-hand standard chairs with three screws. In the former the chairs are placed on the concrete as soon as it is poured, and the four spikes are placed through the chair



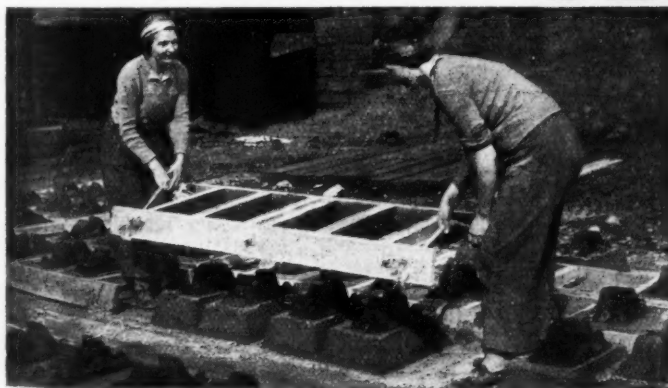
Cross section of concrete block sleeper for low-speed sidings, L.M.S.R.



Inserting spikes through chairs into the wet concrete

have been satisfactory, and one strong feature seems to be the perfect contact between the base of the chair and block, thus minimising any tendency to wear of the concrete surface through the relative movement of chair and block. The portability of the blocks and the small space they take for stacking at the site before being placed in the track are other advantages. It is, of course, important that they should have a good bottom on which to rest, otherwise they might produce unevenness in the track.

The cost of these pre-cast blocks is very low; labour, materials and oncosts working out a fraction over a shilling per chair block, apart, of course, from the value of the second-hand chair and spikes. Quantities of over 3,000 a week have been produced, and a great saving of serviceable second-hand timber sleepers has resulted.



Removing mould from concrete block sleepers 12 hours after pouring

LOCOMOTIVE WEIGHT DISTRIBUTION—I

A discussion of the problem of estimating the total weight and its distribution in new locomotive designs

By GEORGE W. McARD

AMONG the many problems which face the locomotive designer probably the two most interesting are the estimation of the total weight of the new unit, and the most effective distribution of this weight at the rails. The type of engine having been settled at the outset, the weight provided must be apportioned so as to ensure that under all conditions of service the driving and coupled wheels shall have ample adhesion. At the same time due regard must be paid to the strength of the roads and bridges which will be traversed.

Where a trailing axle is provided as in the Atlantic, Pacific, and Mountain types, care must be exercised to maintain a suitable balance of weights on the front and rear carrying axles. At least one design is known to the writer where continual trouble through overheating of the rear-truck axle occurred, due to the load sustained by the bearings at that point exceeding the estimated figure. Errors of judgment in such a matter can be costly to builder and operator, and in the case mentioned delays in service and excessive lubrication charges had to be faced until axles with larger bearings were substituted. In another instance, a 2-6-2 tank locomotive design proved so heavy when built that it was necessary to extend the frames at the rear end and substitute a 4-wheel bogie for the truck. The onus rests on the designer in the first instance to avoid such misfortunes, and only by extreme care, coupled with a judgment matured through experience, can he hope to achieve satisfactory results.

As to the total weight estimate, several factors may contribute to a heavier engine than was intended; one is the employment of unsuitable weight factors by those who calculate the individual weights of boiler, frames, cylinders, and so forth. A number of engineering handbooks give tables of weights and factors for evaluating sq. ft., cu. in., etc. in terms of lb., cwt., and tons, but many of these values are purely theoretical and rarely take into account such considerations as rolling margins on plates and sections, mixture specifications for gun-metal castings, and such like. All these tend in the long run to affect the grand total, more or less seriously according to the size of the locomotive, and the careful designer will adopt his own values which are based on past experience and can therefore be relied upon. Castings, too, unless carefully produced, may be 10 to 20 per cent. heavier than if made carefully to drawing size, and the foundries should be warned in advance to take every possible step to ensure that all castings are to drawing size.

It may be argued that such variations as are involved in the previous paragraph can have little effect when a design is under consideration for which detail drawings are not yet finalised, but every engineer who has undertaken work of this nature will admit that accuracy at every stage is of prime importance, and approximate figures may be used only where reliable statistics are unobtainable. Some draughtsmen take unwarranted risks, and are willing to consider an estimate as "approximately" correct, where others, more careful, will provide for every possible contingency. At this stage the author recalls a design that was received from abroad with a requisition for two tank engines of a new type. The design print gave all essential particulars relative to heating surface and grate area, cylinders and wheels, and so on, and, presumably through lack of data and experience, included in the specification a weight, fully loaded, of 57

tons. The builder whose tender was accepted submitted the opinion that the total weight would reach 81 tons, and when the product was finally weighed, it scaled slightly more than 85 tons—rather a grave miscalculation on the part of the original designer.

A useful system operating in some establishments covers for returns to be made by the shops of all leading components as finished for every new contract, the weights returned being suitably filed for quick reference after receiving a careful scrutiny by a competent draughtsman. The parts covered by these returns include boilers in complete rig, (1) empty, and (2) in working condition; cylinders with valves and covers complete; wheels and axles; coupling and connecting rods (as units) and also the weight as carried on each crankpin, and many others of equal value when a new design is on the board. In regard to the boiler records, the position of the centre of gravity with the centre line lying horizontally was also recorded, and a representative from the drawing office was deputed to supervise the weighing of this and all major components.

Having obtained a total weight in running order which is accepted as the official basis, the next operation is to distribute this suitably over the several axles provided, and the following preliminary step is taken. Sub-divide the weight obtained into two classes: (1) spring-borne weights, and (2) dead weights. The former naturally include every detail which is actually supported by the springs, the remainder, including the springs themselves, forming the dead weights. Discretion must be exercised here as some trucks and bogies have an abnormal proportion of their total weight falling in the dead weight section. Where a booster engine is fitted, a large percentage of this also comes under this heading. From the rail loadings in running order when accepted, deduct the dead weights, thus obtaining the distribution desired for the spring-borne weights, from which the centre

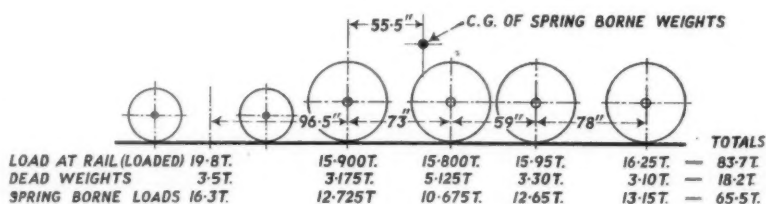


Fig. 1

of gravity required for these masses can easily be obtained. Fig. 1 shows the process for a batch of 4-8-0 three-cylinder locomotives built some years ago for the Buenos Ayres Great Southern Railway.

Assuming the bogie centre line as our base, the moment of the spring-borne masses will be found as follows:—

$$\text{Moment} = (12.725 \times 96.5) + (10.675 \times 169.5) + (12.65 \times 228.5) + (13.15 \times 306.5)$$

$$= 9,958 \text{ in. tons.}$$

Dividing this value by 65.5 tons, the spring-borne total, gives the centre of gravity as situated 55.5 in. behind the first coupled axle.

Knowing, by calculation or otherwise, the individual weights of every part in the above total and their position relative to the base taken, the c.g. of the new design can now be found and compared with that already obtained from

Fig. 2

Ft.-Cwt.

The first case under consideration is a group of 2-6-0

Diagram illustrating the arrangement of six spring borne masses along a horizontal axis. The horizontal distances between the centers of the masses are 106", 87", 99", and 111". The center of gravity (C.G.) of the spring borne masses is indicated by a point above the axis, with a dashed line showing its horizontal position relative to the first mass.

NETT TOTAL OF SPRING BORNE WEIGHTS ADDED = 25.2 TONS
 MOMENTS OF DITTO FROM X = 8763.8 INCH-TONS
 COMBINING WITH C.G. OF BASE ENGINE = 8763.8 + 7906.2 INCH-TONS
 = 16670 INCH-TONS
 TOTAL SPRING BORNE MASSES = 72.8 TONS
 POSITION OF C.G. OF NEW ENGINE = 229" FROM X

Fig. 3

ADHESIVE WEIGHTS REQUIRED
LESS FOR DEAD WEIGHTS
SPRING BORNE WTS. L TONS

18-0T.
3-2T.
14-8T.

18-0T.
3-7T.
14-3T.

18-0T.
3-2T.
14-8T.

T TONS

MOMENTS OF WEIGHTS = $(14.8 \times 106) + (14.3 \times 193) + (14.8 \times 292) + 403 T$
 $= 16670 \text{ INCH-TONS}$
 $\therefore T = 19.9 \text{ TONS}$
 & $L = 9.0 \text{ TONS}$

Fig. 4

Having obtained the total weight of the spring-borne section of the new engine, and its c.g. relative to a definite



centre, there remains only the allocation of this total weight to the several axes provided. The adhesive weight claims first call, and after providing that necessary for this purpose—bearing in mind that there has yet to be added the several amounts of dead weights for each axle—the remainder is a matter of arithmetic. Fig. 4 shows the working out of this process, and Fig. 5 the result, approved by the C.M.E.

(To be continued)

EARLY AUTOMATIC SIGNALLING ON A LONDON TUBE

The Great Northern & City Railway was the first London tube to be signalled throughout automatically. The apparatus originally installed did not meet with the approval of the Board of Trade, but after modification remained in use for many years

MANUAL signalling with lock-and-block was used for the first three London tube railways, the City & South London (1890), Waterloo & City (1898), and Central London (1900), and was not replaced on the Waterloo & City until 1940. Several suggestions were made, however, for signalling such lines automatically and W. R. Sykes submitted proposals, the plans of which are still in existence, to the Central London in 1899, while the line was under construction. They included plain light signals with no moving parts, controlled by sticking polarised relays actuated through brush contact makers or "treadles" (already in use on the City & South London for the manual block signalling) from accumulators carried on the trains. Except for the feed to the lamps in the signals, there was thus to be no source of signal power along the line. These proposals were not adopted, however. The block signalling apparatus actually installed on the Central London was made by the firm of Spagnoletti &

This apparatus was tried on a section of the Central London Railway, the manual signalling being put temporarily out of use, but was removed after a false clear indication, produced by a defect developing in the wiring, had shaken the company's confidence in it; the original equipment therefore continued to function on that line until replaced by a.c. track circuit signalling not long before the last war.

The Great Northern & City line, opened early in 1904, was, however, fitted with Spagnoletti's apparatus. Every station had an outer home, inner home, and starting signal. On leaving a station a train put the starting signal to "danger" and cleared the outer and inner homes simultaneously. The starting signal was cleared when the train put the following outer home to "danger." The relays and pilot lamps were assembled in signal boxes in the stations, but the signalmen normally had nothing to do but book the times of passing trains and exercise a general supervision over the working. They were provided with special emergency switches (not shown in the figure) for altering the condition of the relays in the event of an irregularity occurring. The progress of the trains was noted by watching the pilot lamp indications. At the termini additional mechanism was, of course, required to add a semi-automatic manual control and interlock the signal indications with the points, which were worked by ordinary mechanical means. These call for no special comment. By the kindness of Mr. J. R. Barden, who maintained this equipment, we are able to reproduce the accompanying photograph of the original apparatus at Finsbury Park station. The plunger handles below the main apparatus cases formed part of the semi-automatic manual control for the terminal bay working.

When Colonel Sir Arthur Yorke inspected the line, he declined to accept this signalling as permanent, and insisted on radical alterations being made within a certain time. He pointed out that if a brush should break off, or if the guard, who had to insert a fuse in the brush feed when changing ends at the terminus, failed in his duty, or if the fuse gave out, a train could proceed without putting any signal to danger. This would, of course, result in totally false pilot indications in the stations, with the chance of serious consequences. Such consequences could also follow should a train stop for any reason with its brush on a treadle, a fact which should have been obvious from the first.

The Improved Apparatus

The apparatus was then changed to the form shown in Fig. 2 under a patent (No. 13,709 of 1904) taken out by Mr. R. P. Brousson, Engineer and Traffic Manager of the G.N. & C.R.

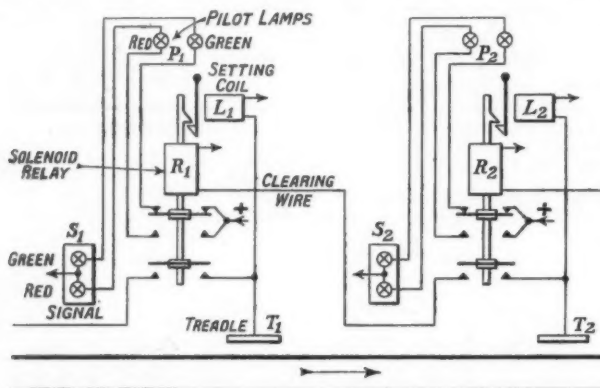


Fig. 1—J. E. Spagnoletti's automatic signalling system

Crookes, and J. E. Spagnoletti, one of the partners and son of the well-known electrician C. E. Spagnoletti, not long afterwards put forward a scheme for automatic signalling (Patent No. 12,089 of 1901), the principles of which are illustrated in Fig. 1.

J. E. Spagnoletti's System

At every signalling point there is a two-aspect light signal *S*, the lamps in which are in series with pilot lamps *P* in the nearest station. The circuits to these lamps are controlled by the block relay *R*, which is of solenoid type; the armature is, in its raised (line clear) position, held up by a catch, itself the armature of the "danger" setting coil *L*, connected to the "treadle" (in reality an insulated plate or piece of rail) marked *T*. There is a "clearing wire" joining every solenoid relay to the signalling point in advance. On a train passing a treadle the brush on the last vehicle feeds power, taken from the traction circuit on the train, to the setting coil at the signal just passed, releasing the solenoid relay, so that the signal is changed to red. Directly the armature of that relay has fallen, the brush being still on the treadle, power is also sent over the clearing wire to the solenoid relay in rear, lifting its armature up above the catch and restoring the signal there to green. The working is thus of the very simplest description.

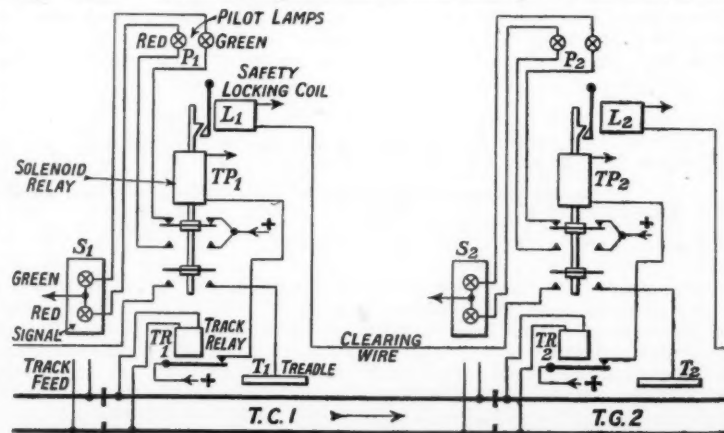
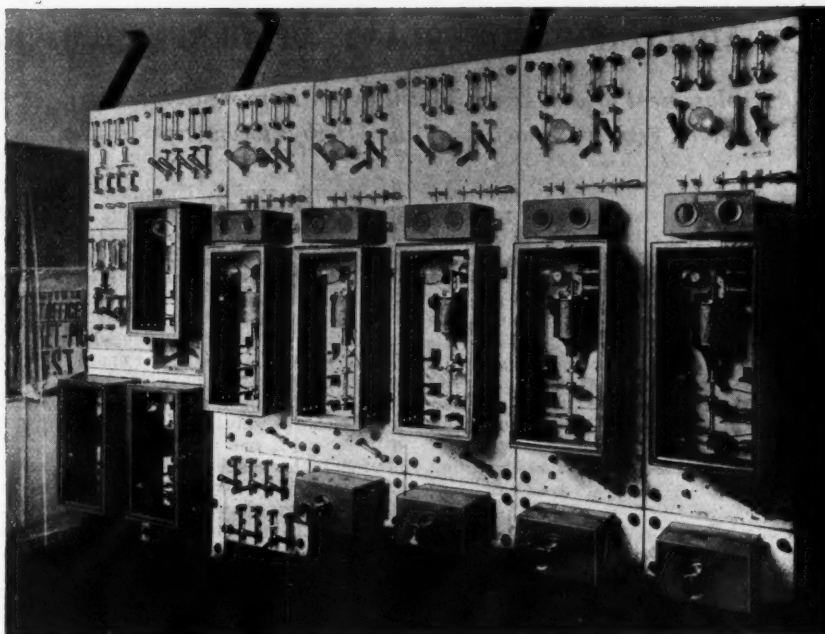


Fig. 2—Brousson and Binyon's system, finally adopted for the G.N. & C.R.



The original equipment in Finsbury Park signal box G.N. & C.R., the first form of automatic signalling apparatus installed on a tube railway

and Mr. Binyon, assistant to Spagnoletti. The line was track-circuited throughout, with d.c. track circuits using a rather heavy form of relay, fed through lamp resistances from mains supplied by motor generators at Highbury station. This was possible as the line had third and fourth rails—it was the first tube railway to have them—one on each side of the track, an arrangement long peculiar to it, although it had been used for the Metropolitan and District Companies' short experimental section, opened in May, 1900, between High Street, Kensington, and Earl's Court. The solenoid relays controlled the signal lights as before, but became *TP* relays, repeating the track relays. The function of the additional coils was precisely reversed, their armatures locking the *TP* armatures when the latter dropped, so that once a train had shunted a track relay the signal controlled was locked at red and remained unaffected should the shunt afterwards fail, or the track relay be irregularly influenced in any way. The brush contact treadle at the overlap point was retained and now

acted on the locking coil in rear, clearing the lock on the *TP* relay there and allowing its armature to rise and change the signal to green. In this form the equipment continued in service for very many years, until replaced by more modern designs. A disadvantage of it was that if the signalling power supply went off, all signals would become locked at red and the station staff or lineman would later have to intervene to clear the lock coils. Additional locking coils were then designed, intended to stop the *TP* armatures dropping past the ordinary lock armatures, to be normally fed in parallel from the signalling supply, but it is uncertain whether they were actually installed. The signalmen, except of course at the termini, were eventually withdrawn.

The Great Northern & City Railway was thus the first London tube to be fitted with automatic signalling—and, shortly, after track circuit—throughout, the first to have light signals having no moving parts in them and the first to have an insulated traction return.

ROLLING STOCK PROGRAMME IN UNITED STATES.—As a measure for conserving metals needed for national defence, the President of the Association of American Railroads has announced a programme for the railway industry which will limit the construction of new locomotives and freight cars to certain designs now in use and facilitate the allocation of steel and other materials to be used for such construction and repair purposes. The chief points of the plan to which the railways are committed with the Office of Production Management are as follows:—

1. The construction of new box, hopper, gondola, and flat wagons will be limited to certain designs now in use.
2. New locomotive construction will be limited to existing designs where patterns, dies, and engineering data are already available.
3. The substitution of other materials as far as possible for scarce metals in locomotive and freight wagon construction.
4. The use of carbon steel rather than alloy steel in locomotive boiler construction.
5. The use of steel plates and steel sheets 48 in. wide in the construction of new freight wagons instead of sizes now largely used ranging up to 119 in. wide.

Under this arrangement, wagon and locomotive builders will interchange plans, engineering data, and patterns, which will expedite the building of railway equipment and increase the

capacity of plant used for that purpose. In simplifying freight-car and locomotive construction railway officials believe that the designs approved will not only expedite production of such equipment as the railways may need, but will also provide the public with the types of equipment generally required at this time to move defence and other traffic.

Under the plan, the standard box wagon will be 40½ ft. in length inside and the automobile box wagon will have an inside length of 50½ ft. There will also be two types of hopper wagons, one of 50-ton capacity and the other of 70-ton. Standardised types of gondola and flat wagons are also prescribed; none of these cars will have a greater inside width than 9 ft. 2 in. or a greater inside height at eaves than 10½ ft. These dimensions will enable the wagons to be freely interchanged on all main lines. The use of nickel steel for locomotive bed castings, axles, rods and other moving parts both for new construction and repairs and for steel plates and rivets for repairs on existing locomotives constructed of nickel steel will continue.

U.S.A. FREIGHT LOADINGS.—Statistics issued by the American Railway Institute show that loadings of revenue freight for the week ended January 3 totalled 674,400 wagons, an increase of 67,900 on last week and one of 60,200 wagons on the same week last year.

NEW AIR-COMPRESSOR PLANT AT DERBY, L.M.S.R.

Replacement of earlier equipment by an improved centralised plant of greater capacity at the Derby locomotive works

BEFORE the outbreak of war a decision had been reached to replace the greater part of the existing air-compressing equipment then installed at the Derby locomotive works of the L.M.S.R. and, in spite of the difficulties which arose as a consequence of hostilities, the work was put in hand and has since been completed.

The compressors to be replaced consisted of a number of vertical single-cylinder two-stage machines of various capacities, having a combined output of some 2,000 cu. ft. of free air per min.; the machines were located at various points in the works. In place of these, a new centralised plant of three 800-cu. ft. twin-cylinder air compressors has now been installed, and among the main features and advantages of the new plant are power-factor-correcting type main driving motors, economy of cooling water, and reduced amount of attendance required.

Briefly, the plant as a whole comprises three two-stage twin-cylinder compressors, each delivering 800 cu. ft. of free air per min. at 100 lb. per sq. in., manufactured by the Ingersoll-Rand Co. Ltd., and driven by direct-shaft-mounted B.T.H. synchronous induction motors of 15 i.h.p.; the compressors draw their intake air through Vokes air filters, and the output from each is passed through Ingersoll-Rand vertical type after-coolers before being delivered to the air receivers. The cooling water for each machine is circulated by the same firm's Moto-pumps to a cooling tower mounted on the roof of the building. The cooling tower, which was supplied by the Premier Cooler & Engineering Co. Ltd., deals with the combined cooling water from the three compressors.

The entire plant has been installed in an existing building to which considerable alterations have been made. The site is located approximately midway between the two points of greatest user of compressed air; viz., the boiler and erecting shops, and it also lies between two substations on the high-tension ring feeder main. It was therefore arranged to supply two of the motors from one substation and the remaining one from another. Thus a supply breakdown from one substation will not shut down the entire plant. Power-factor correction is applied to two feed points. The alterations to the building consisted of removing the span roof, raising the height of the side walls some 5 ft., and building a

flat concrete roof in the centre of which is a concrete walled water pond, 20 ft. by 16 ft. by 2 ft. deep, into which the water from the cooling tower falls. Three air receivers made from old locomotive boiler barrels are also carried on the roof. A small travelling hand crane has been fitted inside the compressor house to facilitate maintenance work.

In the design of the compressors the low and high-pressure cylinders are spaced at 90 deg. with the intercooler tying them together; this arrangement enables a short stiff single throw crankshaft mounted on roller bearings to be employed. The valves are arranged with inlet valves on one side of the cylinders and discharge valves. On the other, instead of the more usual disposition of one above the other. It will be appreciated that a higher efficiency is obtained by keeping the intake air away from the hot discharge valve. The 3-phase 375-r.p.m. driving motors have the rotors mounted direct on the crankshaft extension, and have a power factor of 0.9 leading, becoming more leading as the load falls off. Full electrical interlocking devices and trips to protect both the motors and compressors are fitted, so that the main motor cannot be started until the water circulating pump is running, and is tripped if the pump fails; the motor also trips if the pressure lubrication pump on the compressor fails. The motors cannot be started if the unloading device has not first been actuated, or if the liquid starter handle has not been returned to the "off" position. The compressors embody an automatic load controlling device governed by the pressure in the air receivers. This is in five stages, i.e., no load, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and full load. When pressure in the receiver rises to 100 lb. per sq. in. the compressor will run unloaded; a fall of 2 lb. pressure brings in the first stage, viz., $\frac{1}{4}$ load, and any further fall in pressure brings in the other stages in series.

The vertical after-coolers have proved of great value in cooling the delivery air, and extracting water before the air passes to the receivers and pipe line. Automatic traps are fitted for draining away the condensate. It is expected that the supply of cool, dry air only, will effect a considerable reduction in maintenance costs of pneumatic tools.

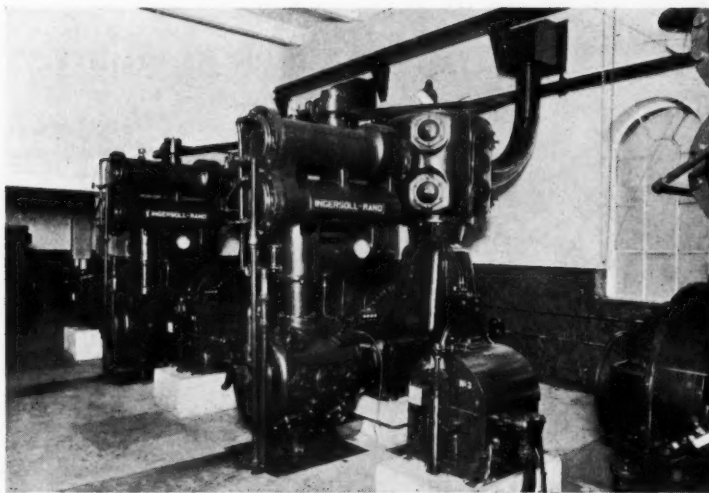
We are indebted to Mr. W. A. Stanier, Chief Mechanical Engineer, of the L.M.S.R., for the foregoing information and the photographs from which the illustrations (reproduced opposite) have been prepared.



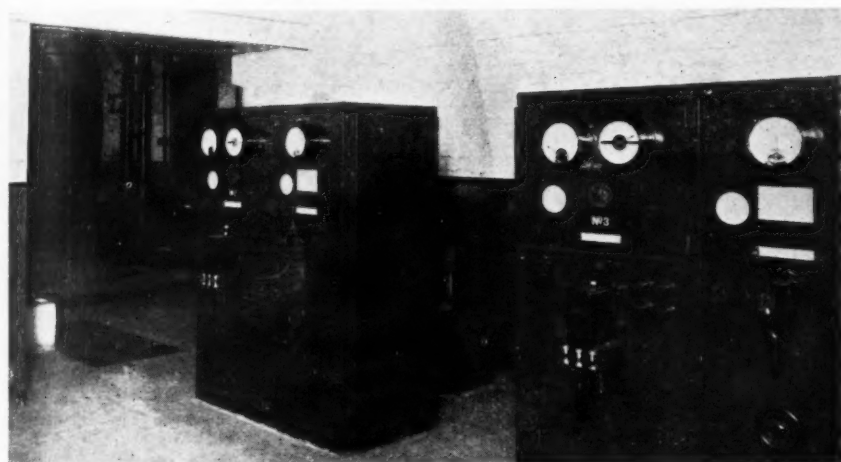
The efforts which the railways are making to assist in the national campaign for the recovery of wastepaper is illustrated by this special transportable display stand, showing what articles can be made from wastepaper, which is touring the principal stations throughout the L.M.S.R. system



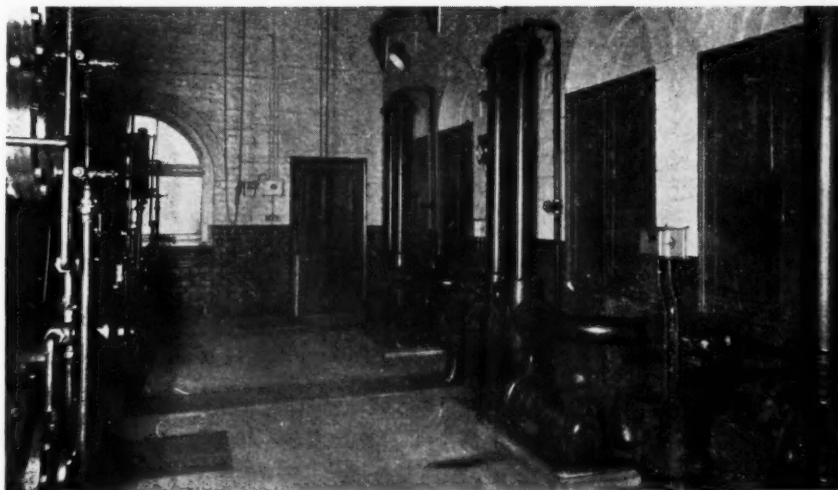
Compressor house, showing the intake air filters which can be seen on the right hand side wall



Interior view showing layout of compressors, looking towards the switch room. Below the outer-stage pressure gauge can be seen four little dials which indicate if compressor is operating at full, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, or no load



Left: View of switchgear room. One of the exciter sets can be seen behind No. 2 panels

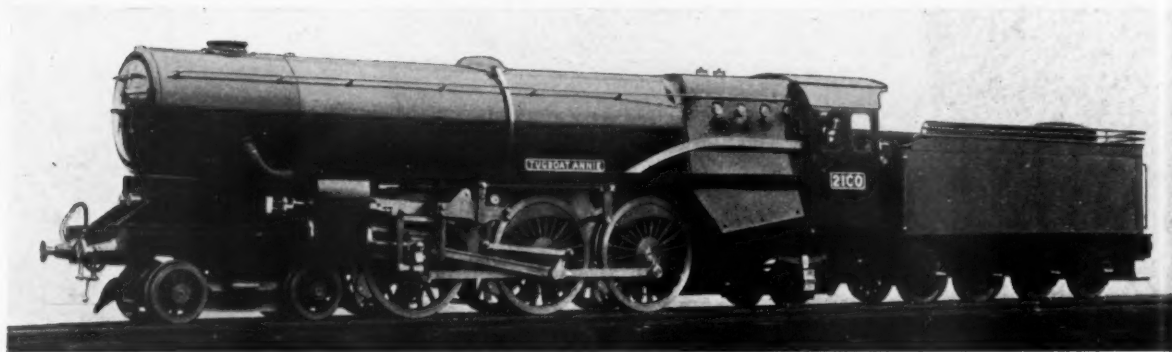


Right: Interior view showing vertical after-coolers with water circulating pumps below

NEW AIR-COMPRESSOR PLANT AT DERBY, L.M.S.R.
(See article opposite)

A REMARKABLE LOCOMOTIVE IN MINIATURE

A 4-6-2 with four cylinders having cranks set at 135 deg. and actuated by conjugated valve gear



Mr. Lawrence's miniature 4-cylinder 4-6-2 "Tugboat Annie"

WE recently visited the workshop of Mr. L. Lawrence, of Purley Oaks, to inspect his latest locomotive in miniature. Mr. Lawrence is well known as a designer and builder of highly successful products in this field, and his writings on their construction in technical journals under the initials "L.B.S.C." are read by thousands of amateur mechanics and others interested in small-scale railways. In some cases a faithful reproduction in miniature of an actual locomotive, past or present, on British or other railways is the object; in others the constructor prefers to embody his own ideas in the way of design, and to produce something novel. There is a third reason for creating these small-scale locomotives, and that is the exhibition and trying out of new devices at small cost, and it was this side of the subject in which we were particularly interested on our visit.

The latest locomotive, *Tugboat Annie*, is a handsome and well proportioned example of the Pacific type, normal in design as far as the wheel and truck arrangement is concerned and in having a large boiler with wide firebox and

revolution. It is, however, the valve-gear arrangement which makes this design so remarkable, the valves of the outside cylinders being driven by two sets of Baker valve gear, and the inside valves through combination levers attached to the valve spindles of the outside cylinders, so avoiding the necessity to have four sets of valve gear.

This arrangement was the outcome of the co-operation of Mr. H. Holcroft, whose pioneer work in connection with these conjugated gears was referred to in a leader in our issue of December 12 (page 607). When approached on the matter, Mr. Holcroft readily agreed to assist Mr. Lawrence to solve the valve-gear problem, and it ultimately resulted in the very neat and compact arrangement illustrated. The problem of compressing such an arrangement into so small a space was not an easy one, there being only a short gap between the back of the inside cylinders and the front of the outside pair through which transverse levers could be inserted. The difficulty was overcome by using two overlapping combinations, the complete assembly of which is shown in Fig. 1. One combination of the two outside valve motions drives the inside right valve, and another combination the inside left. In order to distinguish them the two are shown separately in Fig. 2.

Unit construction is adopted for the valve gears. In the case of each Baker gear, uncoupling of the combination lever, eccentric rod and reversing link enables the remainder to be taken down as a whole by removal of bolts. In actual

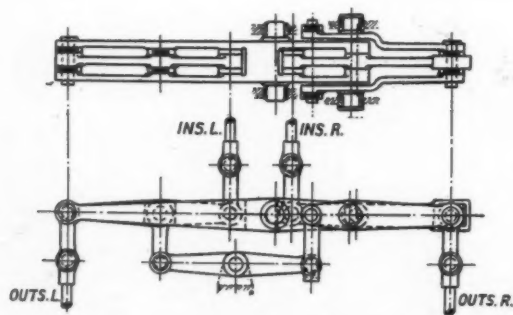


Fig. 1—Overlapping gear combinations for driving the inside cylinders

combustion chamber containing water tubes. There are four cylinders, the outside pair of which is to the rear of the trailing bogie wheels and drives the middle pair of coupled wheels; the inside cylinders are set well forward in order to drive the crank axle of the first pair, as in the Great Western 4-cylinder design. The inside and outside cranks on each side are set at 135 deg. to one another, as in the Southern Railway "Lord Nelson" class, giving eight impulses per

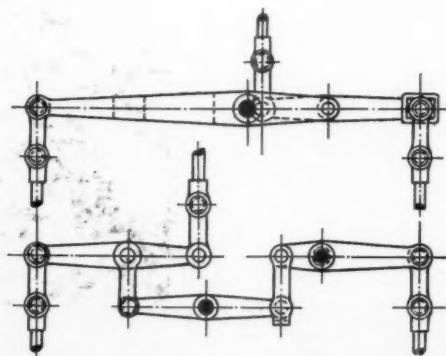


Fig. 2—The two combinations of valve gear for driving the inside cylinders shown separately

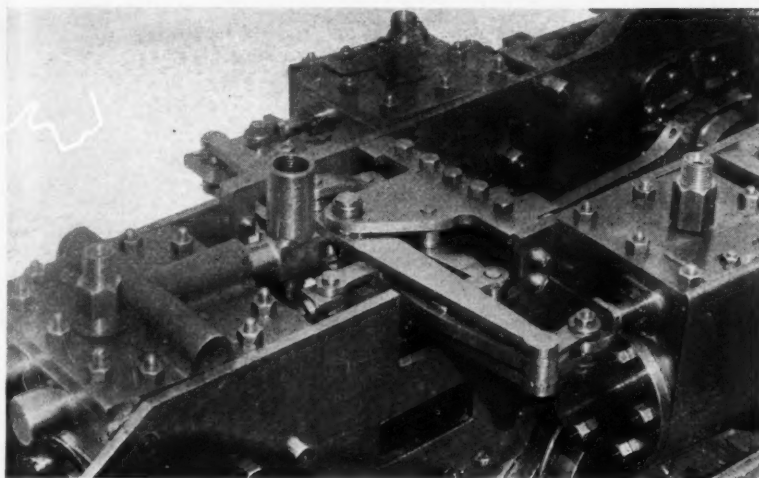
practice the combination lever assembly for the inside valves, complete with brackets would be constructed as a unit, and by uncoupling the valve spindles the whole could be drawn to one side after removal of the fixing bolts, to enable one or other of the outside valves to be withdrawn for examination; or, if necessary, the complete assembly could be taken off the engine by drawing it out from its tunnel below the floor of the smokebox.

In common with the majority of Mr. Lawrence's miniature locomotives, *Tugboat Annie* is built for a rail gauge of $2\frac{1}{2}$ in., and proportioned in accordance, the scale working out at 1:22.6. Notwithstanding the small dimensions, it is coal-fired as a matter of course, fitted with an injector and mechanical lubricator, and axle-driven feed pumps are accommodated between the frames.

After our inspection a demonstration of the small locomotive in steam was given. For lighting up some charcoal was sprinkled with oil and spread over the firebars, and an extension chimney equipped with a compressed-air jet fitted to create draught. From the time of lighting up from cold

while they were audible. By means of a flat-top bogie truck attached to the tender, the operator is drawn as a load and can drive the engine, fire the coal, and regulate the feed when in motion. With the regulator well open the screw reversing gear has to be brought back to nearly mid-gear at speed, and the locomotive will continue to run on an oval continuous track for some considerable time, until a stop is necessary to fill up the tender with coal and water.

The passenger car is fitted with a counter to record the number of laps, and timing of these has indicated a total distance run on one filling of the tender of $1\frac{1}{4}$ miles in 15 min., equivalent to an average speed of approximately 140 m.p.h. to full scale. The maximum speed cannot be ascertained on the oval test track, as the curves at each end are of comparatively sharp radius; but the locomotive has drawn three adults, a load 13 times its own weight at an equivalent of 120 m.p.h. with the reversing gear well notched up. While this does not indicate the maximum performance of the locomotive, it is practical testimony of the good distribution of steam given by the whole of the valve motion and to



View of the conjugated valve gear for the inside cylinders of the $2\frac{1}{2}$ -in. gauge 4-6-2 locomotive "Tugboat Annie"

only $2\frac{1}{2}$ min. elapsed before there was sufficient steam pressure to operate the blower, at which stage the extension chimney was removed, and ordinary Welsh steam coal fired by means of a small scoop. In four minutes the safety valve was blowing off at 80 lb. per sq. in.

Only when starting from rest in full gear forward or back was it possible to distinguish the eight exhaust beats, as, apart from the lightness of the exhaust, the locomotive is fitted with a multiple-jet blast pipe and large-diameter chimney; but we can testify to the regularity of the beats

the extreme accuracy as to dimensions and fit of the various components and their pin joints.

During the test runs the boiler steamed extremely well, notwithstanding the lightness of the exhaust. The safety valve was simmering most of the time, and blew off hard directly the regulator was eased. In spite of its small size the fire was very bright. The lightness of the exhaust is indicated by the small quantity of ash found in the smokebox, only one teaspoonful being found after five hours' working.



Nitrate in bulk being transported over the Taltal Railway to Port Taltal

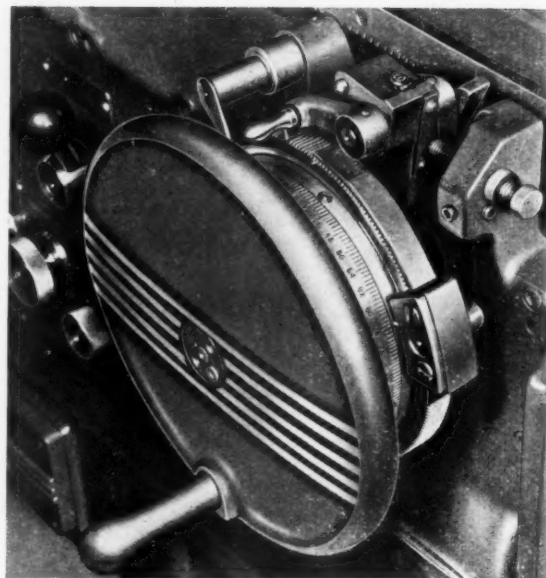
NEW GRINDING MACHINES

The latest Cincinnati hydraulic universal grinding machines incorporate many refinements

A NEW series of universal grinding machines, built in 14 in., 16 in., and 18 in. swings, and 36 in., 48 in., and 72 in. between-centre lengths for each swing, has recently been introduced by Cincinnati Grinders Incorporated, Cincinnati, Ohio. The machines are known as the Hydraulic Universal series, and they embody features similar to the highly successful 12 in. size which was introduced a year ago. The table is powered hydraulically, and has infinitely variable traverse rates of from 3 in. to 220 in. a min. The power-table stroke may be set as short as $\frac{3}{8}$ in., corresponding to the action obtained from a reciprocating grinding wheel spindle. Accuracy of automatic reversal is within 0.004 in., which allows the operator to power grind exceptionally close to shoulders without fear of spoiling the work. Hand table traverse has two mechanically controlled speeds— $\frac{1}{16}$ in. for each turn of the handwheel for close adjustment and grinding shoulders; and $\frac{1}{8}$ in. a turn for setting up; hand servo-power control may be obtained as an extra fitting. This feature is useful when the operator must frequently traverse the table by hand.

Filmatic bearings are used for the main grinding-wheel spindle; each bearing consists of five heavy-steel shoes with bronze lining next to the spindle. These shoes are constructed to create wedge shaped oil films, and are self-adjusting for variations in load produced by the variety of grinding cuts encountered with universal machines. Incidentally, the bearing diameters of the spindle are super-finished to less than one micro-in. A plain bronze thrust bearing, self-adjusting for wear, is located midway between the ends of the spindle. Oil under pressure completely fills the bearing compartment. The spindle cannot rotate until this pressure is attained, and conversely, the spindle drive motor automatically stops if the oil supply fails.

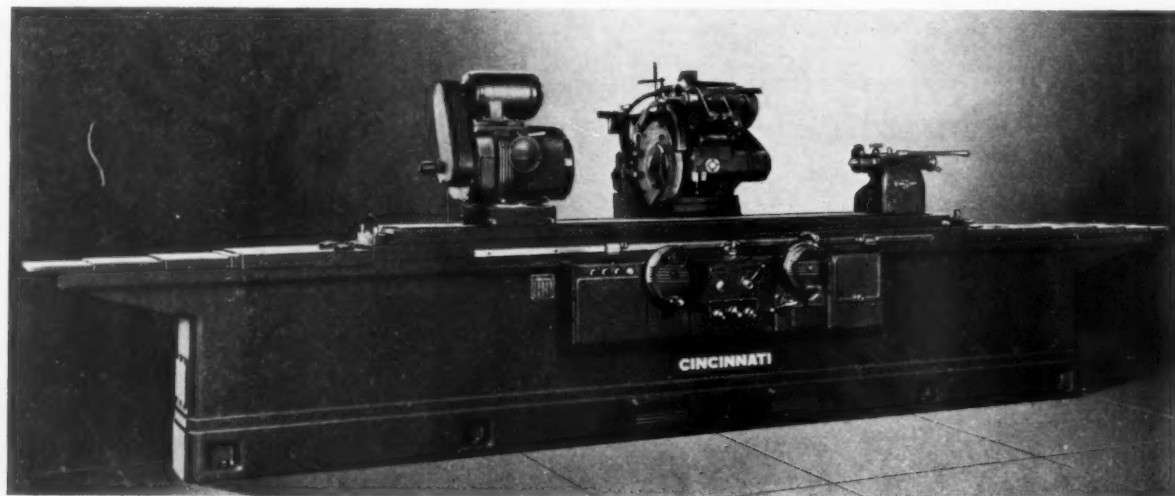
The wheel head may be swivelled 90 deg. right and left. Mounted directly on top of the wheel head unit, a 5 h.p. motor drives the grinding wheel spindle through the medium of V-belts. A hinge-type bracket at the front of the wheel head contains the internal grinding quill and spindle. This construction eliminates the bulk of the setting-up time formerly required for the removable type internal attachment. Then, too, external and internal work can sometimes



Cross feed handwheel and pick feed mechanism. Note graduated rim behind handwheel

be ground in one setting, obtaining perfect concentricity. The attachment is always in place, yet completely out of the way for any job within the capacity of the machine. It may be quickly set up by swinging it down and tightening only one bolt.

The headstock incorporates a new type of drive known as the Speed Ranger. By merely turning a handwheel at the front of the unit, an infinite number of speeds may be selected, ranging from 25 to 225 r.p.m. If desired, an optional range of 40 to 360 r.p.m. may be obtained. Gradua-



Front view of new Cincinnati hydraulic universal grinding machine

tions on the base of the unit are for a swivel range of 90 deg. forward and 30 deg. to the rear; the unit incorporates a quick-change device for live or dead spindle operation.

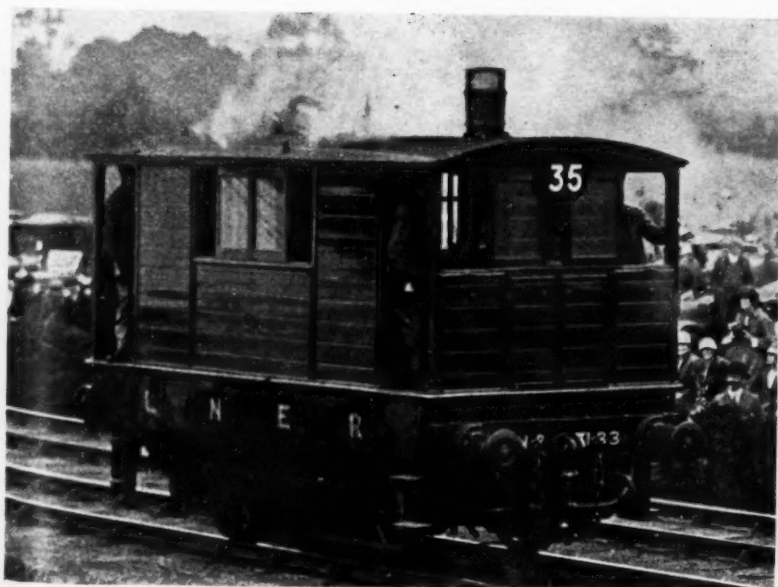
As in the case of the hand table traverse, the hand cross traverse has a two-speed arrangement; 0.050 in. per turn of the handwheel in low gear and 0.250 in. per turn in high gear. The graduations on the rim behind the handwheel shown in one of the accompanying illustrations provide a convenient innovation in grinding machine controls, especially for repetitive multiple diameter work. Diameter reduction as small as 0.001 in. may be obtained by hand adjustment and automatic pick feed may be set for one to seven notches on the cross feed handwheel, reducing the work diameter 0.004 in. to 0.014 in.

Lubrication of the machine is principally automatic. The table ways are protected with telescopic guards, and are pressure lubricated with filtered oil from an individual reservoir. The hydraulic system is lubricated from an individual reservoir, while the headstock unit has automatic splash lubrication. All controls, including the electrical push buttons, are closely grouped, for operating convenience. To further reduce fatigue, the work rotation and coolant flow automatically start and stop with the table traverse start-stop lever. Independent controls are also provided for incidental work which does not require coolant. The foregoing particulars and the originals of illustrations were placed at our disposal by Cincinnati Milling Machines Limited, Birmingham. Sole agents for these machines in the British Isles are Charles Churchill & Co. Ltd., Coventry Road, South Yardley, Birmingham.



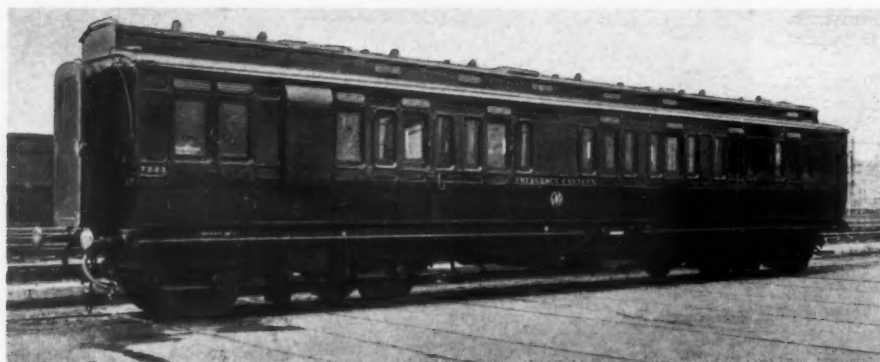
Grinding the bore in a large sleeve gear on Cincinnati 14 in. by 72 in. hydraulic universal grinding machine

A Semi-enclosed L.N.E.R. Steam Locomotive for use on Highways and Quaysides



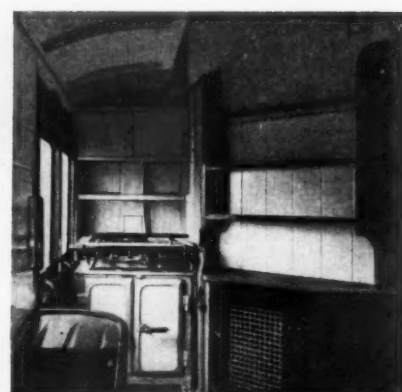
Semi-enclosed type 0-4-0 steam locomotive used mainly for operating trains on public highways and on quaysides. This unit, No. 7133, was built at the Stratford works of the former Great Eastern Railway in 1897; engines of this type date back to 1883. The view was taken during the Centenary procession at the Stockton & Darlington Railway celebrations in 1925

British Railways and the War—98



G.W.R. rail canteen for supplying light refreshments to members of the company's staff at places where feeding arrangements have been temporarily disorganised as the result of air raids. It is a converted 56-ft. corridor brake composite carriage, made ready at Swindon works.

Above: Exterior and, below, interior views



ANCIENT AND MODERN

Left: A long disused railway tunnel in the neighbourhood of Bath which was adapted, very roughly, for use as an air raid shelter for 500 persons. Conditions inside were far from satisfactory, and a small stream of water flowed along one side of the shelter. Recently, this tunnel has been declared unfit for A.R.P. use

The tunnel was built as part of the Avon & Gloucestershire Railway, which was constructed under an Act of June 19, 1828, and opened in 1832. The line began at a wharf on the river Avon below Keynsham, and extended to a junction with the Bristol & Gloucestershire Railway at a point near the present site of Mangotsfield station, L.M.S.R. Coal transport was the primary object of these two early railways. The Avon & Gloucestershire Railway was closely associated with the Kennet & Avon Canal. The latter was bought by the G.W.R. in 1852. An Act of 1865 authorised the G.W.R. to abandon the whole or any part of the Avon & Gloucestershire Railway, and the site of a considerable portion of the line has, in fact, been sold

RAILWAY NEWS SECTION

PERSONAL

RAILWAY COMMISSION

On the advice of Sir Ronald Matthews, Chairman of the Railway Companies Association, a Commission has been set up by the railways to consider post-war planning and reconstruction of the railways. Sir Ernest Lemon, Vice-President of the London Midland & Scottish Railway Company has been seconded from duty with that company to become Chairman of the Commission. The other members are:—

Mr. C. K. Bird, Assistant Divisional General Manager (Southern Area), L.N.E.R.

Mr. K. W. C. Grand, Assistant General Manager, G.W.R.

Mr. F. A. Pope, Manager, Northern Counties Committee, L.M.S.R.

Mr. T. E. Thomas, General Manager (Operation), L.P.T.B.

Mr. F. J. Wymer, Assistant (Planning) to the General Manager, S.R.

Mr. M. G. Smith (L.M.S.R.), is Secretary of the Commission.

The Minister of War Transport has appointed Sir Thomas Ainscough, C.B.E., H.M. Senior Trade Commissioner in India, to be Ministry of War Transport Representative, India, in succession to Sir George Campbell, K.C.I.E., who has resigned on taking up an appointment in the Ministry in London.

The Minister of War Transport has appointed Mr. John Rossick as Assistant Director of Public Relations.

Mr. G. E. Cuffe has been confirmed as General Manager, G.I.P.R., in a provisionally permanent capacity as from July 22.

We regret to record the death, on January 12, at the age of 64, of Mr. Frederick Porter Fausset, Barrister-at-Law. For many years past Mr. Porter Fausset has been a contributor to THE RAILWAY GAZETTE on legal topics relating to transport.

We regret to record the death, on January 12, at the age of 80, of Mr. John Soame Austen. He was Chairman of the British Electric Traction Co. Ltd., and the Western Welsh Omnibus Co. Ltd., Deputy Chairman of the Bolivar Railway Co. Ltd., and a Director of the Argentine Great Western Railway Co. Ltd., the Villa Maria & Rufino Railway Co. Ltd., and the Otoman Railway Holding Co. Ltd.

We regret to record the death, on January 10, at the age of 75, of Mr. John Henson Infield. He was Deputy Chairman of Southdown Motor Services Limited, and a Director of the Brighton, Hove & District Omnibus Co. Ltd.

Sir Ernest J. H. Lemon, who is Chairman of the new Railway Commission, is the Commercial & Operating Vice-President of the London Midland & Scottish Railway. He was loaned to the Air Ministry in June, 1938, at the express desire of Mr. Neville Chamberlain, then Prime Minister, and was appointed Director-General of Aircraft Production. He was made responsible for all production of engines, aircraft, and equipment, and became a Member of the Air Council. Sir Ernest's previous pioneer work with the L.M.S.R. included the planning and installation of pioneer production methods for the building, and maintenance of locomotives, carriages, and wagons, which he introduced and which was recognised by foreign observers as an outstanding development in British industry.



Sir Ernest J. H. Lemon, Kt., O.B.E.,

A Vice-President, L.M.S.R., who has been appointed Chairman of the Commission on Post-war Railway Planning

This fitted him admirably for the problems of production and output in the rapidly expanding aircraft industry. The programme of production planned by him involved not only reorganisation of existing plant but the establishment of new factors as necessary links in the chain of output. The programme laid down more than fulfilled expectations, and was in fact realised in advance of the date originally planned. The Secretary of State for Air, in thanking the L.M.S.R. board for Sir Ernest's services, emphasised the great success which had resulted from his work and added that it would be difficult to overestimate the value of his services to the nation. He

received his Knighthood a year ago for his work at the Air Ministry.

Major E. A. Bambury, V.D., M.I.Loco.E., A.M.I.Mech.E., who has been appointed Advisory Engineer in the buying section of the South African Railways & Harbours office at New York, is a South African by birth. He joined the old Cape Government Railways in 1909, and served his apprenticeship in the mechanical shops at Salt River. He was promoted to Draughtsman in 1916 and Senior Draughtsman in 1928. In 1931 he became Assistant Production Engineer, Pretoria, and returned two years later to Salt River as Assistant to the Mechanical Engineer. After periods as Locomotive Superintendent at Pretoria and Bloemfontein, he was appointed, in 1937, Mechanical Engineer at Bloemfontein. Major Bambury had relieved Mechanical Engineers at the five major depots in the Union and acted as Locomotive Superintendent on the Natal and Western Transvaal systems until his appointment as Chief Superintendent (Motive Power) at Johannesburg in 1938. In November, 1939, he became System Manager, Pretoria. He saw active service in the 1914-1919 War and is at present a Major in the Railways & Harbours Brigade.

We regret to record the death of Mr. Angus D. McDonald, President of the Southern Pacific Company, and Chairman of the Board and Chairman of the Executive Committee of the St. Louis South-Western Railway Company, on November 15, 1941, at San Francisco, California. Mr. McDonald had been President of the Southern Pacific since August 1, 1932, and was responsible for its policies and direction through the worst years of the recent depression in the United States. Under his supervision this company, including the Southern Pacific Company—Pacific Lines, the Southern Pacific Lines in Texas and Louisiana, and the Southern Pacific Railroad Company of Mexico, successfully withstood a heavy decline in the volume of traffic.

Mr. C. H. Holmes, M.C., a member of the staff of the Victorian Government Railways from 1910 to 1929, and subsequently General Manager of the Australian National Publicity Association—formerly known as the National Travel Association—has been appointed by the Federal Cabinet to be Director of the Department of Information. Mr. Holmes, whose new appointment dates from September 22, 1941, joined the railways as a junior clerk in 1910, and in 1915 enlisted for war service abroad. He received a commission, and was awarded the Military Cross for gallantry in the field; he was promoted to the rank of captain. He returned to the railways in 1919. In 1925 he was appointed Secretary to the then Chairman of Commissioners, Sir

Harold Clapp, and in the following year became Chairman of the Betterment & Publicity Board. This post Mr. Holmes vacated in 1929 to become Director of the newly-created Australian National Travel Association, which is represented in Great Britain, the U.S.A., India, and New Zealand; it was during the present war that its name was changed.

Mr. J. E. Sharpe, Divisional Superintendent, London West, Southern Railway, whose death on December 21 we recorded in our January 2 issue joined the L.S.W.R. at Christchurch in 1900. Later he was sent to Kew Gardens, Kew Bridge, and Witley, and in 1909 was transferred to the District Superintendent's Office at Clapham



The late Mr. J. E. Sharpe

Divisional Superintendent, London West, Southern Railway, 1933-1941

Junction. In February, 1917, he went to the Assistant Superintendent of the Line's Office, was appointed Outdoor General Assistant in July, 1919, and Assistant to the London West Divisional Operating Superintendent in January, 1924. In October, 1925, Mr. Sharpe became Assistant Eastern Divisional Operating Superintendent, Dover, and in April, 1930, was transferred to London West Division as Assistant Divisional Superintendent. He was appointed Divisional Superintendent, London West, in July, 1933, and held this position at the time of his death.

We regret to record the death, on December 25, of Mr. Arthur Willis, who was a member of the traction staff of the British Thomson-Houston Co. Ltd. Mr. Willis was born in September, 1873, and had formerly served with the British Westinghouse Co. Ltd., the Westinghouse Brake Co. Ltd., and the Metropolitan Carriage, Wagon & Finance Co. Ltd. In September, 1912, he joined the B.T.H. staff, and from 1915 to 1939 was engaged on commercial engineering work in connection with electric railway traction. He retired in October, 1939.

Mr. W. Murray, Lisle Park, Director of West Riding Automobile Co. Ltd. and other companies, left £357,727.

Mr. S. R. Lysaght, Deputy-Chairman of John Lysaght Limited, left estate in England valued at £22,012.

Mr. F. J. Wymer, Assistant Continental Superintendent, Southern Railway, as recorded in our January 2 issue, has been appointed Assistant (Planning) to the General Manager. Mr. Wymer was educated at Merton Court School, Sidcup, and Eltham College, Mottingham. During the war he enlisted in the Royal Horse Artillery in 1916, subsequently being commissioned in the Royal Garrison Artillery and serving in France and Germany, 1917-19. He was Captain and Adjutant when demobilised. In 1920 Mr. Wymer joined the S.E. & C.R. as probationer and was appointed to the Rolling Stock Section, Superintendent of the Line's Office, in 1923. In the following year he was transferred to the Trains Section of



Elliott

Mr. F. J. Wymer

Appointed Assistant (Planning) to the General Manager, Southern Railway

the London (East) Division, and to the Chief Operating Superintendent's Department in 1928. Mr. Wymer was appointed Assistant to the London (Central) Division Superintendent in 1930, and Assistant to the Traffic Manager for Special Work in 1931. He remained in the latter position until becoming Divisional Marine Manager, Dover and Folkestone, in 1934, and at the end of March, 1938, he was appointed Assistant Continental Superintendent, the position he now vacates.

Captain Addenbrooke, Master of one of the Southern Railway Company's vessels, received the O.B.E. in the New Year Honours. Captain Addenbrooke has seen much war service; he has been afloat practically continuously since the outbreak of hostilities. The names of five other members of the Southern Railway Company's staff who received honours were given in our issue last week.

Mr. John M'Kenzie, L.N.E.R. District Superintendent, Western District, Glasgow, died in a nursing home on January 7. He entered the service of the North British Railway in the telegraph department at Queen Street, Glasgow, in 1898. About a year later he was transferred to the District Superintendent's office, where, after passing through the various departments, he was appointed

Chief Assistant to the District Superintendent in 1919 and District Superintendent in 1932.

Mr. J. F. M. Taylor, Chief Clerk to the Divisional Superintendent, Worcester, G.W.R., as recorded in our December 19 issue, has been appointed Assistant Divisional Superintendent there. His service with the company dates from January, 1924, when he was attached to the General Manager's office. In April, 1935, Mr. Taylor was loaned to the Chinese Government to act as Secretary to a Commission to report on the Chinese Railways under the chairmanship of Brigadier-General F. D. Hammond. In October of the same year he was transferred to the office of the Superintendent



Mr. J. F. M. Taylor

Appointed Assistant Divisional Superintendent, Worcester, G.W.R.

of the Line as a train runner. He acted as Secretary to the Hammond Commission in June, 1937, which was appointed by the Government to report on the Ceylon Railways. At the conclusion of this special duty he was appointed Junior Assistant to the District Traffic Manager at Plymouth in January, 1938, and in September of the following year was loaned to the Railway Executive Committee, and later appointed an Assistant Secretary. He vacated that post in February, 1941, and became Chief Clerk to the Divisional Superintendent at Worcester.

We regret to record the sudden death on January 3 of Mr. Harry Blundell, M.I.Inst.T., sometime Chief Engineer of the former Great Central Railway. Mr. Blundell began his engineering career on the North Staffordshire Railway; he afterwards transferred to the Great Central (then the Manchester, Sheffield & Lincolnshire) Railway in 1890, and was in 1900 appointed Assistant Engineer to that company, which post he vacated two years later to become Chief Engineer to the Cheshire Lines Committee. In 1917 Mr. Blundell became Chief Engineer of the Great Central Railway, and retired at the end of 1922.

At the annual ceremony of nomination of sheriffs, which took place at the Law Courts on November 12, Lieut.-Col. Reginald Tristram Harper, O.B.E., was one of the three nominees for the County of Surrey.

TRANSPORT SERVICES AND THE WAR—123

Rationalisation of retail deliveries—Suspension of Irish Channel sailings—A "Q" campaign in Germany—Road-rail lorry trains on the Eastern front—Progress of producer-gas motors

Retailers all over the country are being asked to co-operate with the Government in preparing and putting into operation new plans for the rationalisation of deliveries to their customers. An indication of this was given in a speech by the Minister of War Transport on October 27 last when he said that the Government had decided, in view of the growing demands of the war effort upon all forms of transport at home, that action must be taken to free transport from all unnecessary movements. All avoidable cross hauls were to be eliminated, and the haulage of goods over long distances curtailed wherever alternative goods could be obtained from nearer sources of supply.

Inquiries made by the Ministry of War Transport, in conjunction with the Ministry of Food and the Board of Trade, have shown that the scope for further saving in retail distribution is considerable; a reduction of 25 per cent. in the use of motor fuel, for example, would mean an annual saving of about 10 million gallons. Possible methods of rationalisation which may be adopted include: (i) Pooling of vehicles to provide a common delivery fleet for a number of shops in the same locality; (ii) Restriction of areas within which retailers may deliver in their own vehicles; and (iii) Restriction to nominated days of the days on which deliveries may be made. To initiate improved schemes for the delivery of goods, the Regional Transport Commissioners are calling meetings of traders in each of the regions. These meetings will be followed by meetings in every town and district. Initially, it is hoped that the traders, who know their own problems best, will prepare their own schemes. Method (ii) may involve exchange of customers so as to bring them within the permissible delivery zone, with possible breaking of rationing registration. The Ministry of Food is responsible for any arrangements to enable this to be effected. The Minister of Food has taken power under an Order of October 28, 1941 (see our January 9 issue, page 69) to issue directions controlling the transport of food.

Accidents in the Blackout

The British railways have recently reported large numbers of cases of passengers getting in and out of trains in motion; alighting from the wrong side of trains; falling from platforms; and getting out of trains which have stopped between stations in the blackout. On one railway alone in two months over 200 persons have been hurt or killed in blackout accidents, a big increase over last winter when the majority of short journey passengers reached their home stations before complete darkness had fallen. Many of these mishaps could be avoided by passengers taking greater care and also by helping each other. Blackout train travellers should look carefully before stepping out of a train, and make sure they alight from the platform side of their carriage. They should remember also that platform and train levels are not always the same. An appeal is made to the public to look out before alighting from trains, and not to attempt to leave or board trains in motion.

G.W.R. Mobile Rail Canteen

As a development of its scheme of air raid precautions, the G.W.R. some time ago designed and constructed a mobile motor-trailer canteen which formed the subject of a brief description with illustrations at pages 475 and 484 of our issue of November 7 last. We are now able to give particulars of another emergency canteen, but in the form of a railway vehicle, which has been made available by the G.W.R. for the same general purposes as the other. It will supply light refreshments and hot and cold drinks to members of the company's staff at places where feeding arrangements have been temporarily disorganised after heavy air raids. To produce this rail canteen, a 56-ft. corridor brake composite carriage has been converted at the company's Swindon works, and is now ready for immediate use.

The compartment partitions have been removed from the coach to form a large saloon, at one end of which is the kitchen, and at the other end the store cupboard. A counter extends the whole length of the saloon between the kitchen and the store cupboard, and underneath, cupboards and drawers are fitted to accommodate crockery, cutlery, etc. There is a sink and draining-board, and two 10-gal. hot water urns are placed on the counter top. The kitchen is fitted with shelves and cupboards, sink, and draining board, and a gas cooker for providing hot meals. A refrigerator cupboard for perishable foods is installed in the corner of the corridor outside the kitchen. About 230 gal. of water are carried in four roof tanks. The coach is gas lit, but for use in emergency Tilley oil lamps are available. The floor is covered with linoleum, and the

windows provided with black curtains to conform with A.R.P. regulations.

The coaches are fitted with steel blinds which can be raised to afford protection against blasting of the windows as well as acting as part of the ordinary blackout scheme of the coaches. Some illustrations are reproduced at page 98.

The Fishguard-Rosslare Service

The passenger steamship service between Fishguard and Rosslare was discontinued after the sailing from Ireland on Sunday, January 4; the last departure from England on this route was on January 2. The service is owned by the Fishguard & Rosslare Railways & Harbours Company, and operated by the Great Western Railway.

Rapid Repair of Railway Bridges

To facilitate the reconstruction of bridges damaged by enemy action, the British railway companies have designed standard spans which can be adapted readily for normal sites where the openings are between 40 and 80 ft. The first of the standard spans has now been erected over a road 60-ft. wide which passes under the Southern Railway. Numbers of the spans are available, making possible permanent replacement of bridges with the minimum of delay.

Southern Railway Completes another Wagon Order

At the beginning of December the Southern Railway received a Government order to construct 600 12-ton open goods wagons for shipment overseas. The work was begun at one of the company's works on December 4, and the last wagon was completed on December 31, an average of a little over 21 wagons a day. The wagons are similar in design to the 1,000 previously constructed, excepting that these 600 have screw couplings and are fitted with the French type Westinghouse brake. Already 220 of the vehicles have left the works, and the balance of 380 awaits instructions from the Government.

Reduced London Tube Station Lighting

Reduced lighting at London Underground stations and in cars may save some 4,000 tons of coal a year. Tests are now being made at Wood Green station, Piccadilly Line, and in a car in daily service on the same railway. In each case the total lighting has been reduced by 50 per cent. At all stations on open-air sections of the Underground the lighting has already been reduced, of course, because of the blackout. At all tunnel stations full platform lighting has been continued. If the tests now being made show that a reduced standard is adequate for traffic, then these remaining stations and all cars will be dealt with.

Special Fares for Forces in the U.S.A.

Last week, at page 70, we made reference to the agreement of the U.S.A. railways to continue until October 31, 1942, the special fare of 1.25 cents a mile for the uniformed personnel of the Army, Navy, Marine Corps, and Coast Guard, when travelling on furlough in uniform at their own expense. These special fares for the uniformed forces were introduced on May 1, 1941. As from October 31 last, arrangements have been in force whereby such cheap fares have been extended to military forces of the British Empire travelling within the U.S.A. in uniform at their own expense when on official leave, furlough, or pass. The special fare is valid, under a 30-day limit, for round-trip travel in railway coaches between all points in the United States. Special fare tickets may be purchased upon presentation of an official furlough-fare certificate which can be obtained from commanding officers at all military establishments.

Christmas Traffic on the Pennsylvania Railroad

The holiday movement of troops and civilians set the Pennsylvania Railroad a problem at Christmas. As an example of the rush that was expected, preparations were made to carry over 100,000 soldiers through Washington alone, from their training camps in the south to their homes in the Middle Atlantic States and New England. Altogether some 300 extra trains were arranged. With the co-operation of the War Department, the men were released for Christmas leave in three batches on (1) December 12-13; (2) December 14, 15, & 16; and (3) December 27, 28, & 29. The return journeys were staggered similarly. To handle this and the civilian holiday traffic, the company had cars of its own available, capable of seating 300,000 passengers at one time, and additional Pullmans were also arranged; all special party and excursion trains were

cancelled meanwhile, and all railway employees and their families were asked to refrain from travelling. Even so, the company warned intending passengers that occasions might occur when civilian passengers could not be carried at the exact time and in the manner they wished, and that seats and sleeping accommodation were limited.

A "Q" Campaign in Germany

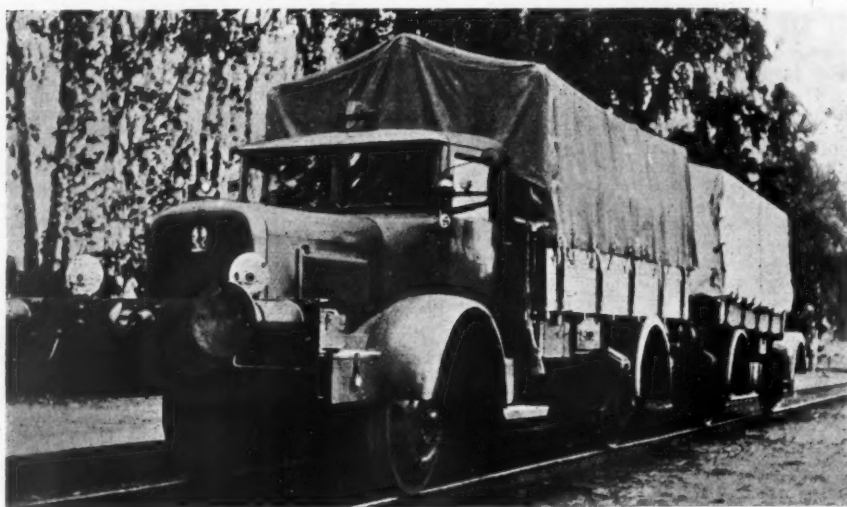
Within the past few weeks an appeal by the Reichsbahn for the rapid loading and unloading of goods wagons has once again been given prominence in the German newspapers. According to an announcement issued on November 14, the German State Railway now has five times as much work to do as before the war, and is operating far beyond the German frontier. The first duty of the Reichsbahn is stated to be that of serving the Army, which requires the transport of troops, war material, and supplies over very long distances in the shortest possible time. The newspaper campaign therefore insists that unnecessary civilian use of the railway should be avoided, and that wagons must be loaded to the limit of their

the practice throughout Austria, and this was implemented by the German authorities, mainly on July 1, 1938, and finally in Vienna on September 22, 1938.

In Hungary, the new measure was also placed in operation in the provinces first, and became compulsory in Budapest, the capital, on November 9 last. To avoid road accidents, the possibility of which was enhanced by the departure from the rule of the road familiar in the district, maximum speeds have been reduced to 60 km. (37 miles) p.h. in rural areas of Hungary, and to 30 km. (19 miles) p.h. in towns and cities.

Drastic Reduction of the Budapest Taxi Traffic

As a result of acute shortage of motor fuel and lubricants by the civil population, drastic reductions of taxi traffic have been enforced in Budapest. As from the beginning of November last, taxis may operate on weekdays only between 6 a.m. and 10 p.m. and their hire on Sundays or by night is allowed only for doctors or for fares to and from railway stations in connection with departures and arrivals of trains; a further exception applies to the use of



Left: One of the road-rail lorry trains provided by the Germans for service on the Eastern front. It will be noticed that the Henschel lorry is provided with railway buffing gear and coupling, as well as flanged steel wheels. For road service, rubber-tyred wheels are carried; with the aid of jacks and spanners, mechanics fit these when required

capacity. Loading and unloading must be carried on without a pause at mid-day, and also on Saturdays, Sundays, and all holidays, with the exception of Easter Day, Whitsun Day, December 25, and January 1. A new feature of the announcement of November 14 is the statement that the Reichsbahn may use compulsion if it appears necessary in the interests of the speedy supply of Army needs.

The Berlin-Helsinki Air Line

The air line between Helsinki and Berlin, with intermediate stops at Tallinn, Riga, Königsberg, and Danzig, was reopened on October 27. The line is operated jointly by the Deutsche Luft-hansa and the Finnish Air Lines (Aero O.Y.).

Repairing French War Damage

A report of the Vichy Secretary of State of Communications, which has reached us through an American source, indicates that, of 470 viaducts destroyed during the period of hostilities in France, 222 have been rebuilt permanently and 178 restored provisionally, and that most of the bridges and roads damaged or destroyed have also been restored to service.

With regard to inland waterways, the report states that, of more than 3,100 miles rendered unnavigable by wartime operations, all but about 125 have been reopened. The number of barges loaded a month had increased from 2,200 in the winter of 1940-41 to 4,200 in July, 1941.

Earlier reference to the restoration of war damage in France, with some statistics up to the end of December, 1940, were given at page 84 of our issue of July 25, 1941.

The Rule of the Road in Hungary

The enforcement, under German auspices, of the right-hand rule of the road in Hungary, which formed the subject of an editorial note at page 431 of our issue of October 31 last, has resulted in the standardisation of this rule of the road throughout the whole of Central Europe. The practice of driving on the left was once the rule in the Austro-Hungarian Monarchy, but, after the last war, Austria found it troublesome to differ in this important matter from her neighbours and made the alteration in some parts of the country. Shortly before the *Anschluss*, the decision was announced to unify

taxis on Sundays in connection with marriage ceremonies or funerals. Country drives by taxi are forbidden. Of the Budapest fleet of about 1,500 taxis, about a third has already been withdrawn as a result of fuel shortage; further withdrawals are envisaged, as well as the reappearance of horse-drawn vehicles.

Finnish Railway Tariffs Increased

Passenger fares and goods rates on the Finnish railways were to be increased by 10 per cent. as from January 1.

Increase of Motor Vehicles in Sweden

Despite the road traffic restrictions introduced last summer, the number of registered lorries and buses in Sweden continues to increase. These restrictions came into force before July 1, 1941, and at that date the lorries in use numbered 34,628, of which 13,900 were operated by transport concerns. On September 1 registered lorries totalled 37,175, with 15,000 in the hands of transport contractors. The number of registered buses was 3,230 on June 1, 1941; 3,414 a month later; and 3,610 on August 1.

Producer-Gas Motors in Sweden

Producer-gas motors in Sweden seem particularly liable to fire, according to a statistical compilation recently published by the Swedish Government Fuel Commission, which shows that no fewer than 437 producer-gas motors of an aggregate value of 859,175 kronor were destroyed or damaged by fire in Sweden during the "war" period from the autumn of 1939 to July, 1941 (that month included). Of the total, 180 lorries, representing a value of 448,400 kronor, used coal fuel, and 76 aggregating a value of 89,650 kronor used wood; there were also 108 coal-fuel private cars valued at 175,400 kronor and 46 wood-fuel cars totalling 89,200 kronor. Apart from these, 13 coal-fuel and 5 wood-fuel motorbuses (valued at 36,500 kronor and 7,075 kronor respectively) were damaged by fire, as well as 9 producer-gas motor vehicles of other types, totalling 12,900 kronor. The insured goods on the vehicles thus burned totalled an insured value of 500,000 kronor, while third-party damages aggregated between 5 and 6 million kronor.

Despite this unfortunate record, doubtless due in part to lack of operating experience, fuel shortage is such that the total of pro-

ducer-gas vehicles is increasing rapidly. The number of registered producer-gas motor vehicles in Sweden on November 15 last reached 72,327, compared with 71,474 on November 1 and 68,872 on October 1. Of these, 40 per cent. were worked on wood fuels. Of the 8,835 producer-gas motor vehicles registered in Stockholm alone, only 31.4 per cent. used gas produced from wood. Earlier figures were given at page 628 of our December 12, 1941, issue.

Producer-Gas Vehicles in German-Controlled Territories

According to reports reaching us from American sources, the total of motor vehicles equipped with producer-gas generators has now reached 180,000 in Germany and German-occupied territories. The estimated monthly saving of liquid fuel is 54,000 metric tons, amounting to an annual figure of nearly 650,000 tons. The German authorities are reported to be aiming at increasing the annual figure of economy in liquid fuel to 1,000,000 metric tons, equivalent to about one-seventh of the pre-war liquid fuel requirements of the Reich. The plans are not confined to the period of hostilities, but form part of a long-term policy of self-sufficiency.

The Barcelona-Palma Air Service

The daily air service between Barcelona and Palma (Majorca) is stated to have been taxed to capacity all last summer. Three-engined 18-passenger Junkers planes were used on this route, which was operated by the Deutsche Lufthansa under the supervision of the Spanish company, Iberia. All the summer, these planes were booked for 15 days in advance, and, when a flight was cancelled on account of bad weather, holders of reservations had to wait their turn for new bookings unless an extra trip was run. The journey time is 1 hour. Earlier reference to this service was made at page 540 of our issue of November 21 last.

Railway Nationalisation in Turkey

The agreement for the purchase by the Turkish State of the Ilija-Palamutluk Railway, to which we made brief reference at page 571 of our issue of November 28 last, has been completed, and is effective from September 22, 1941. This railway, which is one of the few in Asiatic Turkey that has remained until now in private ownership, consists of 29 km. (18 miles) of narrow-gauge line, primarily of industrial importance, and tapping an area of considerable mineral wealth. The Turkish Government now owns the entire railway network of the country excepting the 406 km. (252 miles) of standard-gauge line running along the Syrian frontier between Tchoban Bey and Nisibin.

New Italian Road Motor Companies

Two new Italian road motor transport companies have been formed recently with the participation of the Fiat motor works of Turin.

One company is named the Società Autotrasporti Dalmazia e Montenegro; it is to operate goods and passenger services (both by motor vehicles and trolleybuses) in Italy and Montenegro, as well as in other countries of South-eastern Europe, and its activities will also include trade in motor vehicles, spare parts, and mineral oils. The headquarters of the company are in Turin, and its initial share capital is 1,000,000 lire.

The second company is named the Società Anonima Trasporti Spedizioni Internazionali, and its ambitious programme is to deal with any traffic problem on land, water, or in the air, in any country of the world. Its headquarters are at Turin, and its initial share capital is also 1,000,000 lire.

Air Transport in Argentina

Air traffic on Argentine air lines increased in all categories during the first 9 months of 1941, compared with the 1940 comparable period. Passenger traffic was up 36 per cent., from 29,642 passengers in 1940 to 40,448 in 1941. Mail traffic was up 42 per cent., from 54,827 kg. to 78,093 kg. Express shipments were up 128 per cent., from 41,303 to 94,336 kg. Flight hours increased from 4,733 hours to 6,641; the number of trips from 3,146 to 3,825; and

kilometres flown from 1,129,714 to 1,509,310. Air express traffic data comprise traffic sent under postal auspices. Air freight is another category, and data for 1940 are not available, but 74,157 kg. were carried during the first 9 months of 1941.

The accompanying table gives the operations of air lines over Argentine territory for the first 9 months of 1941, with a few exceptions. Operations of certain lines were not included in the 1940 totals. L.A.S.O., the Army air line from Buenos Aires to Esquel, is one of these, and figures are for the first 8 months only. The new service from Buenos Aires to Asuncion by the Corporación Sudamericana de Servicios Aereos, which began on March 26 last, and the Italian air line L.A.T.I., which extended its weekly service from Rio de Janeiro to Buenos Aires on July 20, are other services which are not for the full 9-month period.

German Air Lines in South America

The German-controlled air line, Sedta, which for many years maintained an internal service connecting the principal cities of Ecuador, suspended operations on September 3; the entire domestic and international passenger and postal air services of Ecuador are now in the hands of an American company.

The German-controlled Condor Air Line, in Brazil, suspended operations on December 16, due to the withdrawal of its fuel supplies by the U.S.A. Standard Oil group.

Air Lines in Bolivia

The Lloyd Aereo Boliviano is the only air line operating in Bolivia, with the exception of Pan American Grace Airways Inc. The Bolivian Government is the largest shareholder in the L.A.B., and the management was formerly controlled by German interests. As we recorded at page 584 of our issue of May 23, 1941, the Bolivian Government was then considering taking over control of the undertaking. This course was eventually adopted, and last November the company was the subject of an agreement with the United States Federal Loan Administrator for its reorganisation on American lines. Under this agreement the management is being vested in Pan American Grace Airways Inc. Most of the L.A.B. equipment consists of German-built aircraft, chiefly of Junkers types, but under the reorganisation arrangements German aircraft will be replaced gradually by American equipment.

New South Wales Railways and the War

According to the report of the New South Wales Government Railways for the year ended June 30, 1941, concessions to members of the armed forces and to blinded and maimed soldiers amounted to £269,467. Direct losses of revenue incurred in the transport at reduced rates of store and starving stock totalled £210,148; rebates of freight allowed on certain classes of traffic totalled £389,917, thus making an aggregate of £869,532 allowed in concessions. The Commissioner points out also that, in addition to this sum, the State Treasury accepted debits in respect of rebates and concessions amounting to £607,814. Considerable work was performed in the Department's drawing offices, workshops, and annexes for Commonwealth authorities and for contractors handling defence orders. This included design, supervision, inspection, and manufacture, and the production of parts for guns, ammunition, aeroplane components, jigs and tools, tents, and miscellaneous military equipment. Works to provide additional facilities to handle such traffic as ores and coal diverted from sea routes, and to meet defence requirements generally, were undertaken on behalf of the Commonwealth. With regard to other works related to defence needs, it was decided to accelerate work on the Hawkesbury River bridge, to duplicate the Cootamundra-Junee section of railway and sections in the Port Kembla area, to interconnect power supplies in order to safeguard the supply of power to industries engaged on war work, and to provide additional generating machinery. Two mobile recruiting trains were operated through country districts of the State during the year. Concession fares allowed previously to members of the defence forces were continued, and in some cases extended. In addition, by arrangement with the Commonwealth and State governments, free travel was granted to defence personnel once a month to enable them to visit their homes. At the end of the financial year, in addition to personnel employed by the Department on defence work, there were over 200 highly-qualified members of the railway staff on loan to Commonwealth Departments.

Abolition of Rickshaws in Rangoon

The use of rickshaws on the streets of Rangoon, the capital of Burma, is to be abolished on April 1 next, under an Order recently issued by the Burma Government. They are to be replaced by side-cars propelled by bicycles, to be known as cycleshaws.

AIR TRAFFIC IN ARGENTINA

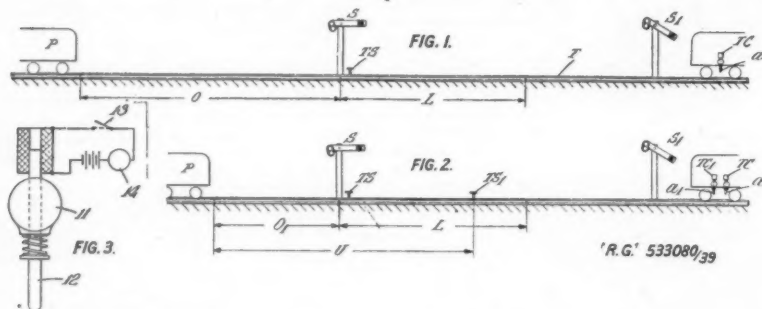
Operator	Buenos Aires to—	Passengers	Mail	Express	Flight hours	Trips	Km. flown
Aeroposta	Tierra del Fuego	2,661	9,720	8,450	1,581	157	349,550
Panair ...	Asuncion ...	827	6,549	3,905	272	77	43,730
Panagra	Chile ...	5,919	10,430	20,600	1,622	384	405,345
Panair ...	Brazil ...	2,239	13,508	8,282	51	234	10,715
Condor	Do. ...	1,587	15,474	28,080	41	161	6,440
Do.	Chile ...	796	3,521	5,519	448	93	102,812
S. A. N. A.	Colonía ...	5,863	1,259	—	144	869	22,175
L. A. S. O.	Esquel ...	837	257	89	680	74	113,248
Panagra	Bolivia ...	1,921	10,838	16,356	948	159	293,880
Corporación	Montevideo ...	5,358	2,103	458	236	482	45,300
C. A. U. S. A.	Do. ...	6,391	451	1,906	228	468	43,320
Do.	Colonía ...	5,589	—	—	97	596	14,800
Corporación	Asuncion ...	460	261	11	284	51	57,175
L. A. T. I.	Europe ...	—	3,721	678	5	20	820
Totals	...	40,448	78,093	94,336	6,641	3,825	1,509,310

ABSTRACTS OF RECENT PATENTS*

No. 533,080. Train Control

William Alexander Agnew, of 101, Goldstone Crescent, Hove, Sussex, and London Passenger Transport Board, of 55, Broadway, Westminster, London, S.W.1. (Application date: August 3, 1939.)

Fig. 1 shows the normal train control system in which a trip device or train



stop TS adjacent the track T, co-operates with the arm *a* of a trip-cock TC on a train to effect application of the brakes should the train inadvertently pass the stop signal S. The train is brought to a stop within the signal overlap, distance, *O*. Signal S1 only indicates a clear run when the preceding train P is clear of overlap *O*. *L* is the "sighting" distance for signal S. According to the invention, an auxiliary trip device TS1 is provided, as shown in Fig. 2. This trip device TS1 co-operates with an auxiliary trip-cock TC1, which has an operating arm *a*1. The trip-cock TC1 and device TS1 are on the opposite side of track T to the normal trip-cock TC and stop device TS. If the train is travelling at a safe speed the driver can displace the arm *a*1 clear of trip device TS1. Thus, for signal S1 to be clear, the preceding train P need only have cleared a distance *U* from the trip device TS1 equal to the distance *O*, so that the overlap *O*1 may be considerably reduced. Fig. 3 shows a trip-cock 11 which is operated through arm 12. This arm 12 extends through the trip-cock 11 into a solenoid which is operated by a switch 13 to lift the arm 12 clear of the trip device TS1 as indicated above. The circuit may also include a centrifugal switch 14 for opening the circuit whenever the train is travelling above a certain speed.—(Accepted February 6, 1941.)

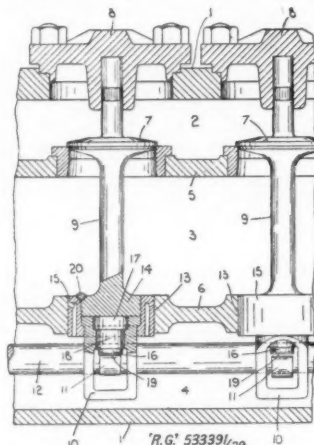
No. 533,391. Locomotive Regulator Valves

The Superheater Co. Ltd., of St. Margaret's Road, Bowdon, Altrincham, Cheshire. (A communication from the Superheater Company, of 60, East 42nd Street, New York, U.S.A. (Application date; October 31, 1939.)

Locomotive regulator valve apparatus consists of a housing 1 divided into three chambers 2, 3, 4 by walls 5 and 6. Valves 7 seat on valve apertures in wall 5, the removable covers 8 having cylinders for receiving the valve stems. The valve stems 9 have stirrups 10 around valve actuating cams 11 carried on operating shaft 12. In addition the stems 9 carry balancing pistons fitting bores 13 in the

wall 6, these pistons comprising heads 14 and rings 15. The upper portion of each stirrup 10 is bored out to two diameters and a shouldered plug 16 is fitted in the bore of the head of the stirrup, the large diameter portion 17 of the plug being uppermost, and the smaller diameter portion 18 being of such a length that it

depends to the required extent into the eye of the stirrup. The lower surface 19 of the plug 16 constitutes the cam lift surface. Stellite or other wear resisting metal or alloy is deposited on the surface 19 and ground true. The ring 15 may be



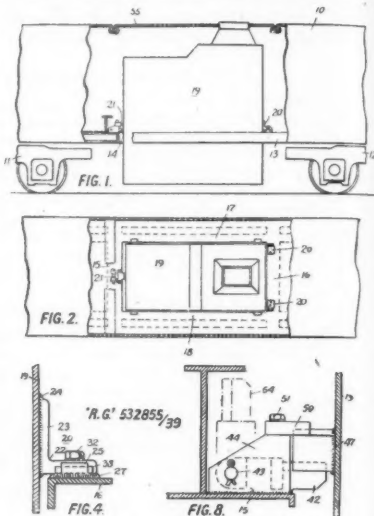
locked to the head 14 by welding 20 or by a grub screw.—(Accepted February 12, 1941.)

No. 532,855. Boiler Supports

The British Thomson-Houston Co. Ltd., of Crown House, Aldwych, London, W.C.2. (A communication from the General Electric Company, of Schenectady, State of New York, U.S.A.) (Application date: September 23, 1939.)

This invention is particularly applicable to modern lightweight locomotives, of the turbo-electric type for example. Mounted on driving trucks 11, 12 is a cab 10. Extending between the trucks 11, 12 is the framework 13, which has an opening 14 defined by members 15, 16, 17 and 18. The boiler 19 is supported in this opening, and may be of the vertical tube type. One end of the boiler 19 is rigidly secured by two supports 20 (Fig. 4), and the other

end is supported by a trunnion device 21 (Fig. 8). The movable roof section 55 of the locomotive is inserted after the boiler has been placed in position. Each support 20 consists of a bracket, 22, the vertical portion 23 of which is welded at 24 to the boiler 19. The co-operating seat block 25 is welded at 27 to the frame member 16. Screws 32 are used to secure the boiler 19 against vertical movement, and wedges 38 are used to relieve the screws 32 from any shearing stress. The support 21 consists of a seat block 42 pivotally secured by a pin 43 between side plates 44. A seating block 47, secured to the boiler 19 rests on the seat block 42, and the boiler is restrained



against vertical movement by a cap plate 50 which is secured by screws 51 on to the plates 44. During lowering of the boiler 19 into position the trunnion seat block may be pivoted upwards to the position 54 and then moved downwardly under the seating block 47 as the boiler approaches its final position.—(Accepted January 31, 1941.)

COMPLETE SPECIFICATIONS
ACCEPTED

533,080. Agnew, W. A., and London Passenger Transport Board. Traffic control apparatus.

533,218. Westinghouse Brake & Signal Co. Ltd. Railway traffic-controlling apparatus.

533,228. Metcalfe, R. D., and Metcalfe, J. C. Exhaust steam injectors.

533,230. Metcalfe, R. D., and Metcalfe, J. C. Exhaust steam injectors.

533,316. Rogers, J. D., and Whitelegg & Rogers Limited. Locomotive and like fire-doors.

533,391. Superheater Co. Ltd. (Superheater Company). Regulator valve apparatus for locomotive and like engines.

533,518. Gallusser, H. Hydraulic brake devices for vehicles of a train.

533,716. Stone & Co. Ltd., J., and Nixon, L. R. Electrical supply installations for the lighting of railway and other vehicles.

533,794. Ross, W. Bogie transfer carriages for handling railway vehicles.

534,045. White, J. W., and Valberg, C. O. Automatic discharge carrier boxes, hopper wagons or the like.

534,195. Gompertz, P. C. Road or railway vehicles.

534,237. Reid, O. W., and Erasmus, E. du P. Railway train-control systems.

* These abridgments of recently published specifications are specially compiled for THE RAILWAY GAZETTE by permission of the Controller of His Majesty's Stationery Office. The full specifications can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, price 1s.

Railway Law for the Quarter

Options and Compulsory Purchase of Land

Oppenheimer v. Minister of Transport
(The Times, November 26)

An important point affecting compensation for compulsory purchase of land by public authorities came for decision in this case. The owner of a large freehold residence, Weir Bank, at the time that he bought it also took an option from the vendor for 10 years to buy three adjoining fields. A few years later the Minister of Transport required parts of these fields in connection with a road construction scheme, and besides serving notices on the actual owner he also served notice on the holder of the option, which was, in fact, registered under the Land Charges Act, 1925. The holder of the option then claimed compensation on various grounds, but as the value of the fields was found to be less than £1,500 the only one with which we are concerned was that upon which he claimed as owner of Weir Bank in respect of injurious affection thereto due to construction of works and user. The Minister argued that when he served his notice the option was at an end and that no compensation was then payable. The owner relied on *London & South Western Railway Company v. Gomm* (20 Ch. D. 562), in which it was held that the right to call for a conveyance was not a mere personal right, but an equitable interest or estate, which gave the holder of the option "an interest in land." On this heading, therefore, he was entitled to recover for the loss of his right. There still remained the question whether Weir Bank was land held with the option fields so as to entitle the owner to compensation for any "injurious affection." Here the option was granted by the vendor when he sold Weir Bank as an inducement to purchase, and there was evidence that without it the purchase would not have been completed. Consequently the owner of Weir Bank was held entitled to prove for depreciation from injurious affection to that property due to construction of works and user.

A Canadian Railway Company's Case

The company *International Railway Company v. Niagara Parks Commission* (1941), A.C., 328, was a Canadian company and the railway was at Queen Victoria Park, Niagara Falls. In 1891 three persons who were the promoters of the railway entered into an agreement with the commissioners, who were the respondents to this action, that the company should construct the railway and that at the end of 40 years the railway should become the property of the commissioners, subject to the payment of compensation. The contract was approved by the Ontario legislature and was declared valid and binding. At the end of the 40 years the commissioners took possession and a sum was awarded as compensation to the company. The company claimed interest from the date of taking possession until date of payment. The commissioners contended that as the contract had been entered into by them as agents for the Crown, the company's only remedy was not by action at law, but by petition of right. The Judicial Committee of the Privy Council held on appeal that the commissioners had contracted on their own behalf as well as

on behalf of the Crown, and that the company was entitled to succeed.

It appears also from the judgment that where a purchaser obtains possession before payment of the price and the case is one in which specific performance would have been granted by the Court, the vendor is entitled to interest on the price as from the date when the purchaser took possession up to the date of payment. As a result of this decision it is clear that this principle is not confined to cases where the contract deals with the sale of land, but extends to contracts generally.

Payment for Requisitioned Vehicles

Roadways Transport Development Limited v. Attorney General. (The Times, December 19.)

The statutory provisions as to payment by the Army for impressed vehicles are to be found in the Army Act, 1881, ss. 112, 113, and 115. The necessary power to impress vehicles for the removal of stores is contained in s. 112. Then s. 113 (4) provides that payment may be made to the "possessor" of the carriage or animal, and that payment to him "shall be deemed to be payment to the owner." Section 115 gives much wider powers of impressment in a state of emergency. Mr. Justice Farwell held that it would not be right to import into s. 115 the powers given under s. 113, because the "owner" in s. 115 would never see his vehicle again, and payment to the "possessor" at the time of impressment would not help him. It followed that where a motor truck had been impressed in the early days of the war under s. 115, it was not enough for the Army Council to hand a cheque to the person who was the apparent but not the real owner. It was still liable to the real owner for the amount. This seemed both an equitable and reasonable construction of the Statute, but the Court of Appeal would not have it, and reversed the decision. The Court said that s. 113 (4) applied all round and that payment to the possessor discharged the Army from liability to the true owner. "But," said Du Parc L.J., "it is regrettable that relations between the Crown and the subject should be governed by provisions which are so obscure and unsatisfactory."

The Coal Commission and Mining Leases

It is evident that the Coal Commission will not give its assent to leases of coal mining rights which it is sought to carry through between private parties before July, 1942, when the Coal Commission makes its report. A recent application to the Railway & Canal Commission for rights to work coal in a certain area called forth this statement from the Chairman of the Coal Commission. Giving evidence, he said that the Coal Commission would have to apply different considerations from those which prevailed in the case of private owners who had to regard private interests only. The duty of the commission was to promote the interests of the industry as a whole. He would be reluctant to see the granting of an Order in cases where the effect would be to remove from the authority of the Coal Commission coal which would not be worked before the vesting date. The commission would wait until the time came for working the coal before deciding on what terms a lease ought to be granted. Generally the commission pre-

ferred tonnage rents to acreage rents; the former were easier to work and more certain in results. Mr. Justice Wrottesley, the President of the Railway & Canal Commission, also intimated that it would be undesirable to grant assent to privately arranged leases before July, 1942, when the Coal Commission would have all the material facts before it.

Staff and Labour Matters

Railway Wages

The claim of the National Union of Railwaymen for a minimum wage of 60s. a week exclusive of war bonus, and the claim of the Railway Clerks' Association for improvements in the rates of pay of the lower classes of salaried staff, both male and female, are to be referred to the Railway Staff National Tribunal for decision. As we go to press a date for the hearing of the claims by the tribunal has not been arranged, but it is anticipated that this will be early in February.

Busmen's Wages

Applications have been made for an increase of 9s. a week in the war wages of employees of the municipal and company owned bus undertakings and the employees of the road undertakings of the London Passenger Transport Board. The workpeople concerned in the applications are at present receiving 11s. a week war wage, which was granted in three instalments of 4s. in December, 1939, 3s. in June, 1940, and 4s. in April, 1941.

Junior Conductors' Pay

Revised minimum rates of pay for junior male conductors employed in municipal bus undertakings have been approved by the National Joint Industrial Council for the Passenger Transport Industry. The revised minimum rates of pay a week are:—

Age	Group 1	Group 2		Group 3	
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
18-19	...	2 10 1	2 8 1	2 6 1	...
19-20	...	2 17 7	2 15 7	2 13 7	...
20-21	...	3 5 1	3 3 1	3 1 1	...

These amounts include the present war wage of 7s. 1d. a week.

PENNSYLVANIA RAILROAD EARNINGS.—Gross revenues of the Pennsylvania Railroad for September were \$56,250,123 (\$42,687,076) and net railway operating income \$10,710,461 (\$8,393,699). For the first nine months of 1941 gross revenues were \$446,309,081 (\$347,189,551) and net railway operating income was \$76,385,144 (\$59,751,141).

A SPANISH INVENTION.—A trial was recently made on the Madrid-Leganés section of the National Western-Andaluces Railway, of a new arrangement of "light articulated connections" for rolling stock, an invention which has been patented and developed by an Officer of Engineers, Lt.-Colonel Alejandro Goicoichea. The arrangement provides for a coupling from the centre of one axle to the ends of the next, wheels being free on fixed axles, with drum brakes, and it is claimed by the inventor that greater stability is obtained with vehicles so fitted, at high speeds and on curves. The trials were made in the presence of representatives of the engineering staff of the national railways and of the technical departments of the Government.

The German Wagon-Building Industry

Financial results of four important undertakings

The following details relating to four important units of the wagon-building industry in Germany have recently come to hand.

H. Fuchs Waggon-Fabrik A.G., Heidelberg.—This company is no longer a member of the Vereinigte Westdeutsche Waggonfabriken A.G. concern (Cologne). The majority interest of the Fuchs Company has been taken over by the Dillinger Hüttenwerke (Dillingen Siderurgical Works, Sarre province), and it forms part of that concern as from July 1, 1941. Because of this change the Fuchs Company is able to secure the main part of its requirements of rolling stock building material from its own concern; at the same time the production of the Dillingen works is also eased. The undercarriages for the tank wagons now building are, for instance, built at the Fuchs works and their superstructure is constructed by the Dillingen works, and in a general way Fuchs reports to have been able to carry out its production programme according to plan in the course of the past financial year. The number of workmen employed had been but little increased. Gross earnings increased by 21.9 per cent. from Rm. 4,190,000 to Rm. 5,100,000, and salaries and wages advanced by 14 per cent. only from Rm. 3,060,000 to Rm. 3,490,000. Taxation rose to Rm. 830,000 as compared with Rm. 580,000 in the preceding financial year. Net profit amounted to Rm. 570,552, as against Rm. 358,004 a year before, and the dividend was unchanged at 6 per cent. on the share capital of Rm. 2,000,000. Rm. 139,324 was carried forward. Liabilities rose to Rm. 4,100,000, as against Rm. 2,930,000 a year previously, mainly because of payments on account for new orders from the German Reichsbahn. The book value of the plants amounted to Rm. 1,840,000, as against Rm. 1,829,000 at the end of the preceding financial year. Order books are stated to be filled.

Görlitzer Waggon und Maschinenbau A.G., Görlitz.—This company reports a considerably increased turnover for the year ended June 30, 1941, as a result of more plentiful orders. Gross profit rose to Rm. 24,650,000 as against Rm. 19,120,000 a year previously, and salaries and wages totalled Rm. 18,440,000, as compared with Rm. 14,210,000 in the preceding financial year. Amounts due for interest absorbed, Rm. 420,000 (Rm. 500,000 a year ago). Taxation absorbed Rm. 2,480,000 (compared with Rm. 1,820,000), and depreciation was Rm. 2,640,000, as against Rm. 1,900,000 a year previously. The net profit amounted to Rm. 752,734 as compared with Rm. 361,219 a year before, enabling the company to pay a dividend of 7 per cent. on the old ordinary share capital of Rm. 7,830,000; the new ordinary share capital receives 3½ per cent. The share capital had been increased from Rm. 8,000,000 to Rm. 10,000,000 in the course of the year. Liabilities rose from Rm. 25,280,000 to Rm. 34,790,000 mainly through the issue of a 4½ per cent. loan in 1941 for over Rm. 5,000,000 to redeem banking debts amounting to Rm. 3,000,000. The company's operating capital is Rm. 38,880,000, as against Rm. 27,160,000 a year earlier, and the

plants are valued at Rm. 10,150,000 (Rm. 10,150,000 a year before).

"Westwaggon," Vereinigte Westdeutsche Waggonfabriken A.G., Cologne-Deutz.—This company paid a dividend of 6 per cent. on its share capital of Rm. 11,000,000 for the year ended June 30, 1941. The dividend for the preceding financial year was 5 per cent.; no dividend had been paid in former years.

"Eva," Eisenbahn-Verkehrsmittel A.G., Berlin.—This company was originally a subsidiary of the Österreichische Eisenbahnverkehrsanstalt, of Vienna (Austrian Railway Traffic Concern). After Austria's incorporation into Germany that subsidiary company absorbed its parent company and is now operating both in Germany and Austria. In its report for the year ended March 31, 1941, the company emphasised the greatly increased demand for the hire of tank wagons, vat wagons (for acids), and normal goods wagons. The company's rolling stock had been considerably increased by a number of tank wagons. Refrigerator wagons, operated by a subsidiary, the Kühltransit-Verkehrs A.G., were almost constantly in use and a great number of wagons with refrigerator machines had been ordered. The employment of the company's tank vessels is reported to be satisfactory; one of the tank barges was sold, a motor vessel had been acquired, and several tank vessels are building. The company's Brühl railway works (Rhine-land) are said to be working at capacity. Gross earnings increased from Rm. 5,640,000 by about 20 per cent. to Rm. 6,760,000 (wages, salaries, and social welfare expenditure rose to Rm. 2,090,000), an increase of about 25 per cent. from Rm. 1,660,000 a year before. Interest absorbed Rm. 56,000 (Rm. 61,000 a year ago) and extraordinary receipts were Rm. 2,440,000 as against Rm. 50,000 for the preceding financial year. Taxation rose to Rm. 2,210,000 from Rm. 1,340,000, and depreciation increased to Rm. 1,790,000 as compared with Rm. 1,510,000, including Rm. 1,210,000 for the rolling stock (Rm. 1,040,000 in the preceding financial year). Rm. 480,000 for the plants (Rm. 380,000 a year earlier), and Rm. 60,000 for the tank vessels (Rm. 70,000 a year previously). The net profit, after allocation to reserves, amounted to Rm. 960,000, compared with Rm. 1,070,000 for the preceding financial year, and does not wholly cover the amount required for the payment of the 6½ per cent. dividend on the increased share capital of Rm. 13,500,000. A dividend of 10 per cent. had been paid in the previous year on the old share capital of Rm. 9,000,000. The company's majority shareholding is owned by the Allgemeine Transportmittel-Finanzierungs A.G., in which the Brussels "Auxiliaire" group is mainly interested apart from certain leading Berlin banks.

an American company to furnish traffic control equipment for installation on the Santos Dumont-Lafayette and the Lafayette-Bello Horizonte lines as well as other equipment for signal cabins, according to a report by the Foreign Commerce Weekly of the United States Department of Commerce. The contract will be made in dollars up to a maximum of \$1,571,000 f.a.s. New York, and be payable in 14 half-yearly instalments.

British and Irish Railway Stocks and Shares

Stocks	Highest 1941	Lowest 1941	Prices	
			Jan. 9, 1942	Rise/ Fall
G.W.R.				
Cons. Ord. ...	43½	30½	45	—
5% Con. Pref. ...	109½	83½	109½	+ 1
5% Red. Pref. (1950) ...	105½	96½	106	+ 1
4% Deb. ...	113½	102½	112½	+ 2
4½% Deb. ...	115	105½	114	+ 2
4½% Deb. ...	121½	112	119½	+ 1
5% Deb. ...	132	122	128	—
2½% Deb. ...	70	62½	68	—
4% Deb. ...	129½	116	128½	+ 2
5% R. Charge	128	110½	128½	+ 2
5% Cons. Guar.	128	110½	128½	+ 2
L.M.S.R.				
Ord. ...	17½	11	18	— 1
4% Pref. (1923) ...	53	33½	52½	—
4% Pref. ...	68½	48½	68½	—
5% Red. Pref. (1955) ...	97½	77	95½	+ 1
4% Deb. ...	105½	97	106½	+ 2
5% Red. Deb. (1952) ...	110½	106½	109½	+ 2
4% Guar. ...	100	85½	100½	+ 2
L.N.E.R.				
5% Pref. Ord. ...	3½	2½	4	—
Def. Ord. ...	2	1½	2½	+ ½
4% First Pref. ...	52½	33	51½	—
4% Second Pref. ...	19½	10	20	—
5% Red. Pref. (1955) ...	79½	52	78½	+ 1
4% First Guar. ...	90½	74½	89½	+ 1
4% Second Guar. ...	80½	59	78½	—
3% Deb. ...	79½	68½	79½	+ 2
4% Deb. ...	104	91½	104½	+ 2
5% Red. Deb. (1947) ...	106	102½	104	—
4½% Sinking Fund Red. Deb.	103½	99½	101½	+ 1
SOUTHERN				
Pref. Ord. ...	65½	43½	63½	—
Def. Ord. ...	15½	9	15½	— ½
5% Pref. ...	107	77½	106½	+ 1½
5% Red. Pref. (1964) ...	107	89½	106	+ 1½
5% Red. Pref. ...	128	111	127½	+ 1
5% Red. Guar. Pref. (1957) ...	114½	107½	113½	—
4% Deb. ...	112	102½	111½	+ 2
5% Deb. ...	130½	119	128½	—
4% Red. Deb. (1962-67) ...	108½	102	107	—
4% Red. Deb. (1970-80) ...	108½	102½	107	—
FORTH BRIDGE				
4% Deb. ...	99½	90½	98½	—
4% Guar. ...	99	85½	98½	—
L.P.T.B.				
4½% "A" ...	120½	109½	117½	—
5% "A" ...	130½	115½	129	+ 2
4½% "T.F.A." ...	103½	99½	100½	—
5% "B" ...	117	102	115	—
"C" ...	46½	28½	40	—
MERSEY				
Ord. ...	24½	19½	22½	—
4% Perp. Deb. ...	100	90	99½	—
3% Perp. Deb. ...	73½	63	72½	—
3% Perp. Pref. ...	58	51½	57	+ 1
IRELAND BELFAST & C.D.				
Ord. ...	4	4	4	—
G. NORTHERN				
Ord. ...	14½	3	14	—
G. SOUTHERN				
Ord. ...	14½	5	10½	+ ½
Pref. ...	17	10	11½	+ ½
Guar. ...	44	16	41	+ 3
Deb. ...	61	42	55½	—

Contracts and Tenders

The National Railway of Mexico is enquiring in the United States for two 86 ft. business cars.

The Central Railway of Brazil has been authorised by decree-law to contract with

Official Notice

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Friday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

OFFICIAL NOTICES

ASSISTANT ENGINEER (CIVIL) required for the Gold Coast Government Railway for two tours of 12-24 months, with possible permanency. Salary £475 rising to £840 a year, then, subject to promotion to a vacancy, to £1,000 a year. Free quarters and passages.

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Notes and News

Air Lines in Venezuela.—The only air line operating in Venezuela is that of the Linea Aeropostal Venezolana. Its aircraft are of U.S.A. manufacture.

Collision Near Leeds, L.M.S.R.—On Saturday night, January 10, the 8.20 p.m. passenger train from Manchester to Leeds ran into the rear of a Birkenhead to Copley Hill goods train at Farnley junction at 10.54 p.m. The guard of the latter was killed and several persons were injured. A paraffin tank wagon caught fire and there was a good deal of wreckage.

Great Southern Railways (Eire).—For the 52nd week of 1941 the Great Southern Railways (Eire) reports passenger receipts of £38,742 (against £34,999), and goods receipts of £68,195 (against £53,388), making a total of £106,937, against £88,387 for the corresponding period of the previous year. The aggregate receipts to date are passenger £2,072,035 (against £1,837,817), goods £2,951,238 (against £2,581,877), making a total of £5,023,273 (against £4,419,694).

The Eccles Collision.—Major G. R. S. Wilson on January 7 opened the inquiry on behalf of the Ministry of War Transport into the collision which occurred on December 30 at Eccles, L.M.S.R. The death roll has now reached 21. After hearing a general statement from Mr. S. E. Parkhouse, Divisional Superintendent of Operation, Crewe, L.M.S.R., and the evidence of two signalmen, the driver, fireman, and guard of the Kenyon train, Major Wilson announced that the rest of the evidence would be heard in private and the finding issued to the press and interested parties in due course. In his statement, Mr. Parkhouse said that the trains involved were the 6.53 a.m. from Kenyon to Manchester, and the 6.55 a.m. from Rochdale to Pennington. The Kenyon train was crossing from the up slow to the up fast line, and the second and third coaches were struck by the Rochdale train. Two coaches of the Kenyon train were completely demolished and two severely damaged. One coach of the Rochdale train was demolished and two seriously damaged. All the casualties occurred in those seven coaches.

New Danish-German Ferry Route.—In continuation of the paragraph with the above heading on page 510 in our issue of November 14 last, it may be noted that the train ferry vessel to ply between Puttgarden, on the north coast of Femern island, and Rodby, on Lolland, will have three parallel tracks and will be available for road motor traffic when not carrying railway vehicles. The 23-mile new line across Lolland will be single, but equipped for through fast traffic only, and there

will be no intermediate stations or level crossings. The Hamburg-Copenhagen distance by this new route will be reduced to 350 km. (217 miles) made up as follows: Hamburg-Puttgarden, 150 km. (93 miles); Puttgarden-Rodby, 18 km. (11 miles); and Rodby-Copenhagen, 182 km. (113 miles). Some 1,400 men are at present at work on the Danish section of the construction. The opening of this route will bring Stockholm and Oslo within a day's journey of Hamburg.

Trading with the Enemy.—The Board of Trade has made a new Order, which came into force on January 6, containing 391 additions to the "black list" of traders in neutral countries with whom it is unlawful to have dealings of any kind. The Order is published by His Majesty's Stationery Office under the title of the Trading with the Enemy (Specified Persons) (Amendment) (No. 22) Order, 1941 (Statutory Rules & Orders, 1941, No. 2084), price 4d. net.

Air Transport in Cuba.—Two air transport companies are engaged in the provision of scheduled air transport in Cuba, one internal, and one international. All international air lines are operated by Pan American Airways Inc., and all the internal lines by the Compañía Nacional Cubana de Aviación a wholly-owned subsidiary of Pan American Airways. The Cuban National Aviation Company receives a monthly subsidy from the Cuban Government. All its aircraft are of U.S.A. origin.

New York Suburban Line.—A total of 4½ miles of the old New York, Westchester & Boston Railroad was brought back into service last summer, to meet the demands of north-east Bronx residents, which had been insistent since the closing of the line on December 31, 1939. This section is now operated as part of the New York municipal subway-elevated combine, and the third rail has been installed in place of the Westchester's overhead catenary and block signals, train control, and station turnstiles introduced. A score of cars from the ex Ninth Avenue elevated line have been allocated to work the traffic.

Standard Time in the U.S.A.—On October 21, 1941, the Interstate Commerce Commission ordered a revision of railway time zone boundaries whereby all of the State of Georgia has been placed in the Eastern standard time zone, together with a substantial portion of Florida, as from November 2, 1941. The Interstate Commerce Commission rejected a petition to include additional parts of East Kentucky and Tennessee. These changes were made subsequent to the preparation of the map which we reproduced at page 14 of our January 2 issue. Reference to that map will show that the changes tend towards

the restoration, in part, of the standard time zone boundary adopted by the railways on November 18, 1883. The Eastern zone boundary had subsequently been moved considerably further to the west.

Spanish Railway Company Fined.—The Bilbao-Portugalete Railway Company, under a Decree of the Ministry of Commerce and Industry, has been fined 450,000 pesetas (about £10,000). No reason was given, says Associated Press. The Bilbao-Portugalete Railway, a busy line of 17 km. (10½ miles), is a subsidiary of the Northern Company, and is one of the few broad-gauge railways not included in the nationalisation scheme of last year.

International Sleeping-Car Company in Italy.—The demand is being made in the Italian press that the Italian branch of the International Sleeping-Car Company shall be nationalised, says the official German news agency. At present about 60 per cent. of the capital is in French and Belgian hands. The papers consider this step necessary in order to be in a position to encourage touring in Italy, a question that will have to be dealt with sooner or later. Reference is made to German example with the Mitropa.

C.P.R. Interests in Air Lines.—The Canadian Pacific Railway has acquired a majority interest in Prairie Airways Limited and Wings Limited. The transactions apparently were completed last November. Prairie Airways Limited has its headquarters at Regina and for some time has been operating commercial flying services between Regina, Moose Jaw, Saskatoon, Prince Albert, and North Battleford. Wings Limited operates from Winnipeg and supplies services in North-Western Ontario and Manitoba. The acquisition of majority interests in these two companies is in accordance with the policy laid down by Sir Edward Beatty in his annual address last year to C.P.R. shareholders when he said that, to provide air traffic connections with the railway and to remedy a competitive situation in air traffic, particularly in the west, the company had acquired majority interests in the MacKenzie Air Service Limited, Yukon Southern Air Transport Limited, Starratt Airways & Transportation Limited, Ginger Coote Airways Limited, and United Air Services Limited, Edmonton. Since that time the operations of these companies have been reorganised under their former executive and managers. In January, 1942, control has been acquired of Canadian Airways Limited, pioneer aviation company, and of Quebec Airways Limited, its subsidiary, with widespread services throughout Canada. Dominion Skyways Limited, with headquarters in Montreal, and Arrow Airways Limited, of La Pas, Manitoba, were acquired at the same time.

Railway Stock Market

There have been signs of a broadening of interest in the investment sections of Stock Exchange markets, accompanied by a fairly widespread improvement in security values. British Funds were again higher, sentiment being assisted by the substantial funds which await reinvestment. Unless very adverse war news were to come to hand, it is being assumed that gilt-edged securities will continue to show an upward tendency, and that the trend in gilt-edged will probably remain an important factor influencing other sections of the Stock Exchange. Home railway prior charges were in demand, but in many instances they were in very short supply, and some debentures have gained a point or more on balance. Guaranteed stocks were moderately better, but little change was shown in senior preference issues. Among junior stocks there was a disposition for profit-taking to develop following their recent improvement, and they were slightly lower on balance. The market expects next month's announcements to show at least the maintenance of dividend rates; there is continued talk of the possibility of small increases in some cases. Nevertheless, there has been no indication of increased speculative interest in junior stocks at the time of writing, sentiment having been governed more by uncertainty as to the war damage liability than by the large yields ruling at current prices. The home rail-

way market was, of course, very interested in the announcement that the post-war planning of British railways is to come under the consideration of a commission under the chairmanship of Sir Ernest Lemon, which is to have very wide terms of reference. At the moment markets have tended, however, to be influenced more by the difficult problems that will have to be faced in the post-war period than by the large current yields and the probability of the maintenance of fairly satisfactory dividend payments until one year after the war. It should not, of course, be overlooked that most industries will have problems of considerable difficulty to meet in the period of reconstruction following the war. Speculative activity has been less marked in South American railway securities, but in numerous directions prices were again higher on balance, the upward tendency having been aided by the announcement of payment of arrears of debenture interest by the B.A. & Pacific and Argentine Great Western companies.

Compared with a week ago, Great Western ordinary stock has moved back from 45½ to 44½ at the time of writing. On the other hand, Great Western 5 per cent. preference improved fractionally to 109½, while the guaranteed stock was higher at 129½, and the 4 per cent. debentures rose from 111 to 113. L.M.S.R. ordinary was a point down on balance at

17½. On the other hand, the guaranteed stock, which is, of course, well covered as to dividend and has excellent investment merits, was higher at 100½. Whereas L.M.S.R. senior preference gained half-a-point to 69; the 1923 preference was a point down at 51½; the 4 per cent. debentures rose two points to 107. Among L.N.E.R. issues the 4 per cent. debentures were 105, compared with 103½ a week back, and the 3 per cent. debentures were slightly higher at 79½. Moreover, the first guaranteed moved up from 89 to 90½, and the second guaranteed from 79 to 79½. L.N.E.R. first preference eased from 51½ to 50½, but the second preference at 20 was unchanged on balance. Southern 4 per cent. debentures appreciated from 110½ to 112; the guaranteed stock was 128½, and the 5 per cent. preference made the slightly higher price of 107. On the other hand, Southern deferred has gone back from 15½ to 15½ at the time of writing, and the preferred from 64½ to 63.

Among South American railway securities, B.A. Gt. Southern ordinary was unchanged at 10, but the 4 per cent. debentures further improved from 60½ to 62½. B.A. & Pacific debentures were higher, as were B.A. Western 4 per cents. Central Argentine issues, however, were inclined to ease. Elsewhere, United of Havana 1906 debentures were active and higher at 17. Canadian Pacific 4 per cent. non-cumulative preference stock was higher at 65, attention being drawn to the apparently attractive yield.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1941-42	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to date			Shares or Stock	Prices				
			Total this year	Inc. or Dec. compared with 1941		Totals		Increase or Decrease		Highest 1941	Lowest 1941	Jan. 9 1942	Yield % (See Notes)	
						This Year	Last Year							
South & Central America														
Antofagasta (Chili) & Bolivia	834	4.1.42	£ 16,620	+ £ 2,280	1	£ 16,620	£ 14,340	+ £ 2,280	Ord. Stk.	10½	3½	10	Nil	
Argentine North Eastern	753	3.1.42	ps. 144,300	+ ps. 46,900	27	ps. 5,030,700	ps. 4,251,700	+ ps. 779,000	"	4	1	3½	Nil	
Bolivar	174	Dec., 1941	4,500	+ 1,800	52	47,694	45,200	+ 2,494	6 p.c. Deb.	5	5	7	Nil	
Brazil									Bonds	8	2½	10	Nil	
Buenos Ayres & Pacific	2,801	3.1.42	ps. 1,440,000	+ ps. 48,000	27	ps. 35,503,000	ps. 31,852,000	+ ps. 3,651,000	Ord. Stk.	7½	1½	6½	Nil	
Buenos Ayres Great Southern	5,082	3.1.42	ps. 2,736,000	+ ps. 555,000	27	ps. 60,589,000	ps. 52,998,000	+ ps. 7,591,000	Ord. Stk.	10½	3½	10½	Nil	
Buenos Ayres Western	1,930	3.1.42	ps. 758,000	+ ps. 95,000	27	ps. 22,283,000	ps. 18,398,000	+ ps. 3,885,000	"	9	2½	8½	Nil	
Central Argentine	3,700	3.1.42	ps. 1,603,000	+ ps. 183,200	27	ps. 47,391,550	ps. 37,681,950	+ ps. 9,709,600	"	8½	2½	7½	Nil	
Do.									Dfd.	2½	1	3	Nil	
Cent. Uruguay of M. Video	972	27.12.41	24,234	+ 797	26	589,879	531,719	+ 58,160	Ord. Stk.	9½	1	7½	Nil	
Costa Rica	188	Nov., 1941	23,078	+ 2,298	22	114,236	93,515	+ 20,721	Stk.	15½	11½	12	16½	
Dorada	70	Nov., 1941	13,060	+ 1,260	48	136,030	134,200	+ 1,830	1 Mtc. Db.	97	97	90½	6½	
Entre Rios	808	3.1.42	ps. 197,000	+ ps. 36,600	27	ps. 7,260,700	ps. 5,936,700	+ ps. 1,324,000	Ord. Stk.	11½	1½	7	Nil	
Great Western of Brazil	1,016	3.1.42	11,000	+ 600	1	11,000	10,400	+ 600	Ord. Sh.	6½	1½	7	Nil	
International of Cl. Amer.	794	Nov., 1941	\$431,078	+ \$79,499	48	\$5,097,659	\$5,098,199	+ \$540	"	1st Pref	—	6d.	—	Nil
Interoceanic of Mexico									"	—	—	—	—	Nil
La Guaira & Caracas	224	Dec., 1941	5,675	+ 945	52	78,050	77,230	+ 820	Ord. Stk.	4½	½	4½	Nil	
Leopoldina	1,918	13.12.41	27,155	+ 1,680	50	1,321,401	1,160,232	+ 161,169	"	—	—	—	—	Nil
Mexican	483	31.12.41	ps. 498,500	+ ps. 57,400	26	ps. 7,873,700	ps. 7,106,900	+ ps. 766,800	"	—	—	—	—	Nil
Midland of Uruguay	319	Nov., 1941	12,157	+ 975	22	66,948	57,186	+ 9,762	"	—	—	—	—	Nil
Nitrate	386	31.12.41	5,447	+ 3,230	52	145,834	175,725	+ 29,891	Ord. Sh.	66½	1½	3½	3½	
Paraguay Central	274	3.1.42	\$2,853,000	+ \$383,000	27	\$94,041,000	\$90,634,000	+ \$3,407,000	Pr. Li. Stk.	43½	29	42½	7½	
Peruvian Corporation	1,059	Dec., 1941	76,699	+ 11,843	26	432,542	393,325	+ 39,217	Pref.	6½	1½	7	Nil	
Salvador	100	Nov., 1941	c\$3,000	+ c\$15,000	22	c\$244,172	c\$203,683	+ c\$40,489	Ord. Stk.	52	24½	47	4½	
San Paulo	1534	28.12.41	32,937	+ 19	52	1,903,759	1,898,073	+ 5,686	Ord. Sh.	1½	6½	1½	Nil	
Taitai	160	Nov., 1941	3,340	+ 1,275	22	25,330	13,935	+ 11,395	Ord. Stk.	1½	6½	1½	Nil	
United of Havana	1,346	3.1.42	18,201	+ 2,665	27	520,524	400,622	+ 119,902	"	2½	—	3½	Nil	
Uruguay Northern	73	Nov., 1941	1,294	+ 62	22	6,686	5,631	+ 1,055	"	—	—	—	—	Nil
Canada														
Canadian National	23,560	31.12.41	1,796,459	+ 287,566	52	60,875,373	49,471,108	+ 11,404,265	Perp. Dbs.	94½	85½	93½	4½	
Canadian Northern	—	—	—	—	—	—	—	—	4 p.c. Gr.	104½	99½	100½	4	
Grand Trunk	—	—	—	—	—	—	—	—	Ord. Stk.	13	7½	12½	Nil	
Canadian Pacific	17,137	31.12.41	1,401,600	+ 405,600	52	44,289,200	34,193,000	+ 10,096,200	"	—	—	—	—	Nil
India														
Barst Light	202	31.10.41	9,542	+ 4,297	29	103,042	86,265	+ 16,777	Ord. Stk.	345	253	338½	4½	
Bengal & North Western	2,099	Nov., 1941	253,425	+ 15,228	10	528,525	513,931	+ 14,594	"	101½	95½	100½	4	
Bengal-Nagpur	3,269	10.10.41	234,750	+ 14,924	27	4,993,938	4,533,077	+ 460,861	"	105½	101½	101½	6½	
Bombay, Baroda & Cl. India	2,986	31.12.41	369,750	+ 36,300	39	8,119,875	7,440,150	+ 679,725	"	98½	92	97½	6½	
Madras & Southern Mahratta	2,939	31.10.41	197,475	+ 19,268	29	4,213,780	3,500,159	+ 713,621	"	105½	101½	101½	7½	
Rohilkund & Kumaon	546	Nov., 1941	49,125	+ 296	10	97,275	95,874	+ 1,401	"	342	290	340	4½	
South Indian	2,421	20.10.41	138,643	+ 13,081	28	2,955,174	2,560,855	+ 394,319	"	100	87	97½	4½	
Various														
Beira	204	Oct., 1941	82,103	+ 2,532	4	82,103	98,304	+ 46,556	Prf. Sh.	1½	29½	2½	Nil	
Egyptian Delta	610	10.10.41	11,017	+ 2,532	27	144,860	—	—	B. Deb.	68	45	60	5½	
Manila	277	July, 1941	18,648	+ 7,251	4	18,648	11,397	+ 7,251	Inc. Deb.	90½	85½	89½	6½	
Midland of W. Australia	1,900	25.10.41	41,081	+ 9,811	30	1,483,406	1,359,899	+ 423,507	"	—	—	—	—	Nil
Nigerian	2,442	Oct., 1941	482,053	+ 482,053	4	482,053	—	—	"	—	—	—	—	Nil
Rhodesia	13,291	22.11.41	810,591	+ 43,574	34	25,712,444	23,098,246	+ 2,614,198	"	—	—	—	—	Nil
South Africa	4,774	Aug., 1941	1,046,106	+ 157,817	9	1,757,717	2,001,145	+ 244,428	"	—	—	—	—	Nil

Note. Yields are based on the approximate current prices and are within a fraction of ¼. Argentine traffic is given in pesos

† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend